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FAMILY COMPUTING

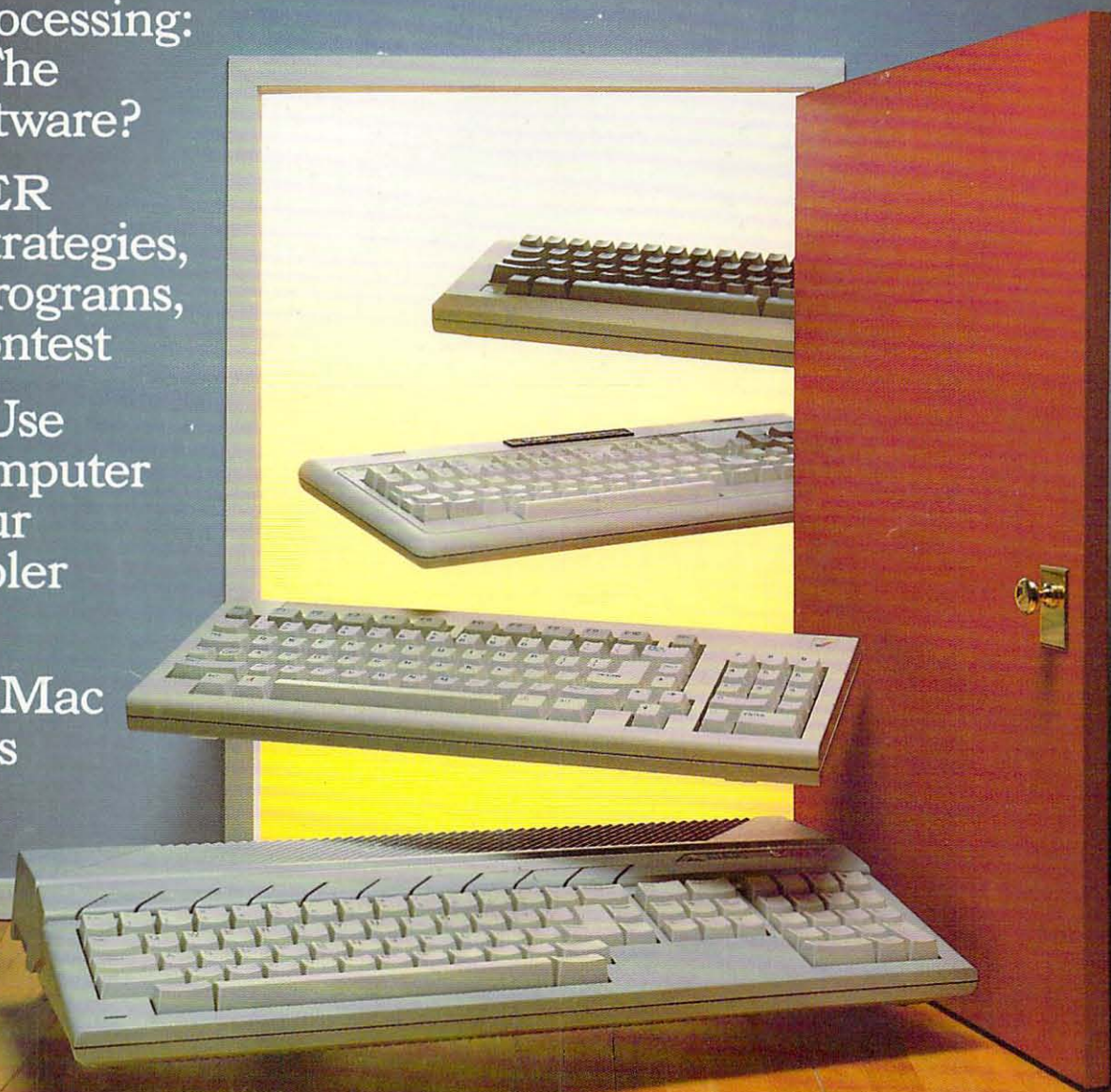
More Power for the Home Your Guide to Computers

Word Processing:
What's The
Best Software?

K-POWER
Game Strategies,
Music Programs,
and a Contest

How to Use
Your Computer
With Your
Preschooler

A First:
Original Mac
Programs



ORIGINAL PROGRAMS
ATARI, COMMODORE
TRS-80 COLOR COMPUTERS

PLUS: A BONUS

AT-A-GLANCE
SOFTWARE
REVIEWS



Why every kid should have an Apple after school.

Today, there are more Apple® computers in schools than any other computer.

Unfortunately, there are still more kids in schools than Apple computers.

So innocent youngsters (like your own) may have to fend off packs of bully nerds to get some time on a computer.

Which is why it makes good sense to buy them an Apple IIc Personal Computer of their very own.

Send them home to a good school system.

The IIc is just like the leading computer in education, the Apple IIe. Only smaller. About the size of a three-ring notebook, to be exact.

Of course, since the IIc is the legitimate offspring of the IIe, it can access the world's largest library of educational software. Everything from Stickybear

Shapes™ for preschoolers to SAT test preparation programs for college hopefuls.

In fact, the IIc can run over 10,000 programs in all. More than a few of which you might be interested in yourself.

For example, the best-selling, AppleWorks™ 3-in-1 integrated software package. Personal finance and tax programs. Diet and fitness programs.

Not to mention



fun programs for the whole family. Like "Genetic Mapping" and "Enzyme Kinetics."

One Apple that won't leave them hungry.

The Apple IIc is easy to set up and learn. And it comes complete with most everything you need to start computing in one box.

Including a free, easy-to-use 4-diskette course to teach you all about the IIc — when your kids get tired of your questions.

As well as a long list of built-in features that would add about \$800 to the cost of a smaller-minded computer.

The features include: 128K of internal memory — as powerful as the average office computer.



The ImageWriter II prints high quality color graphics.

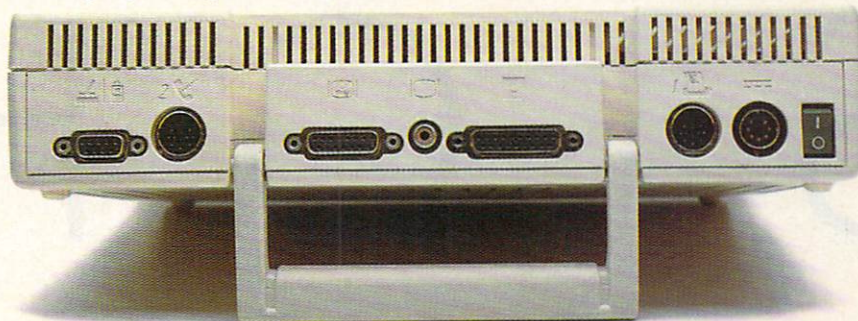
A built-in disk drive that could drive up the price of a less-senior machine considerably.

And built-in adaptors for

adding accessories, like our new ColorMonitor IIc, ImageWriter™ II printer and the Apple Personal Modem 300/1200.

A feast for their eyes.

The big 14-inch ColorMonitor IIc displays crisp, color graph-



The most popular peripherals plug right into the back of the Apple IIc.

ics or a high resolution 80-column monochrome text for word processing.

You can print sharp color graphics, too, with our new ImageWriter II. It also prints



And speaking of high quality color, introducing ColorMonitor IIc.

near-letter-quality text in black and white, quickly and quietly. And, with its new SheetFeeder, you can switch to single sheets without

removing the sprocket paper.*

If local color isn't enough, you can talk to the rest of the world through our new wall-mounted Apple Personal Modem 300/1200. With it, you can do your banking at home, check your stocks, gain access

to all kinds of information libraries and much more.

Which would all add up to a very impressive list of expandable accessories if it weren't for all the others. Like an Apple-Mouse. And an extra disk drive when the time comes.

Avoid growing pains.

So while your children's shoe sizes and appetites continue to grow at an alarming rate, there's one thing you know can keep up with them. Their Apple IIc.

To learn more about it, visit any authorized Apple dealer. Or talk to your own computer experts.

As soon as they get home from school.



* Optional accessory may be purchased for ImageWriter II. © 1985 Apple Computer, Inc. Apple and the Apple logo, AppleWorks, and ImageWriter are trademarks of Apple Computer, Inc. Stickybear Shapes is a trademark of Optimum Resource. For an authorized Apple dealer near you, call (800) 538-9696. In Canada, call (800) 268-7796 or (800) 268-7637.

A SIGHT FOR SORE EYES

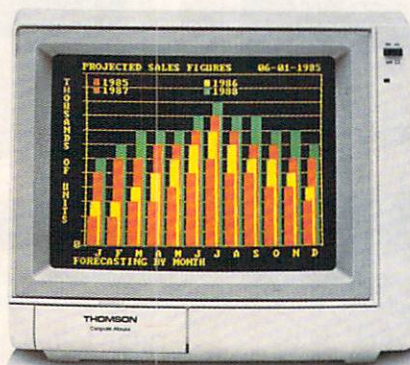
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Model CM 3131SL 12" diagonal, 31mm dot pitch
RGBI color monitor with text switch and
non-glare tinted screen.

THOMSON



FAMILY COMPUTING

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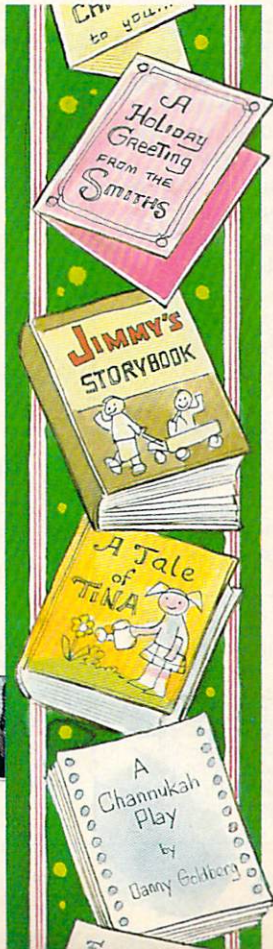
90 Compucopia

A little program for the big task of saving to disk.

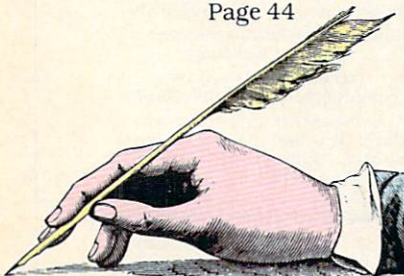
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You'll need fast reflexes and nerves of steel to beat *Get 'Em*. For ADAM, Apple & Macintosh, Atari, Commodore, IBM PC & compatibles, and TRS-80 CoCo & Models III and 4.

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COVER PHOTOGRAPH BY WALTER WICK

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EDITOR'S NOTE

THE THINKING SEASON

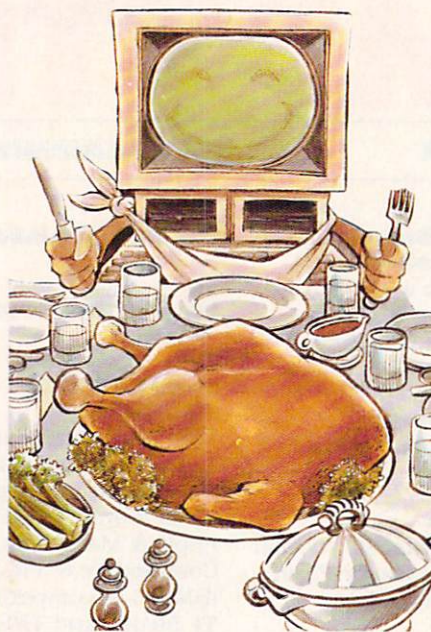
Despite all the fuss about last-minute shoppers, this holiday season actually is a time of planning and thinking. Card lists. Gift lists. Guest lists and menus. It seems endless. But for these special once-a-year festivities, it's important to get things right.

In recent years, the computer has become one of the most popular new gifts of the season. And, of all the gifts I can think of, it's the one that requires the most thought and planning. A computer is not a good impulse buy. There's probably even a direct correlation between pre-purchase planning and post-purchase satisfaction.

That's why we're running our "Buyer's Guide to Computers" (page 35) this issue: to give you more time to think and plan, and a greater chance that you'll be satisfied with your purchase. The choices before consumers this year represent a departure from the past. New computer models boasting more power at reasonable prices complicate decision-making and raise a bevy of new questions to consider before taking out your checkbook or credit card.

In this issue, we're delivering on our promise to readers of increased coverage of the Macintosh, the first of those new computers. You'll find both original programs for the Mac (page 55) and more Mac software reviews than usual (page 93). Although Apple continues to direct the Mac to the business community, our mail and our sources indicate that a large number of Macs sold are making their way into the home.

For computer owners with the



wherewithal to start planning now for the weeks ahead, I recommend our Telecomputing article about online shopping (page 16) and "Holiday Helper," our piece on preparing for the holidays—computer-style (page 41).

My own mission for the holidays is to find the most personal, original ways to express and demonstrate my feelings and appreciation to people who mean the most to me. A lot of them are my fellow staff members on FAMILY COMPUTING. They've been planning, for what seems like forever, ways to make your holidays special. We hope you enjoy our efforts as much as we did creating the results.

Most of all, we hope your holidays start with a lot to be thankful for. May you have the happiest of Thanksgivings.

Claudia Cohl

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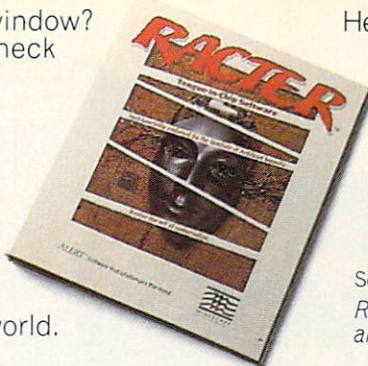
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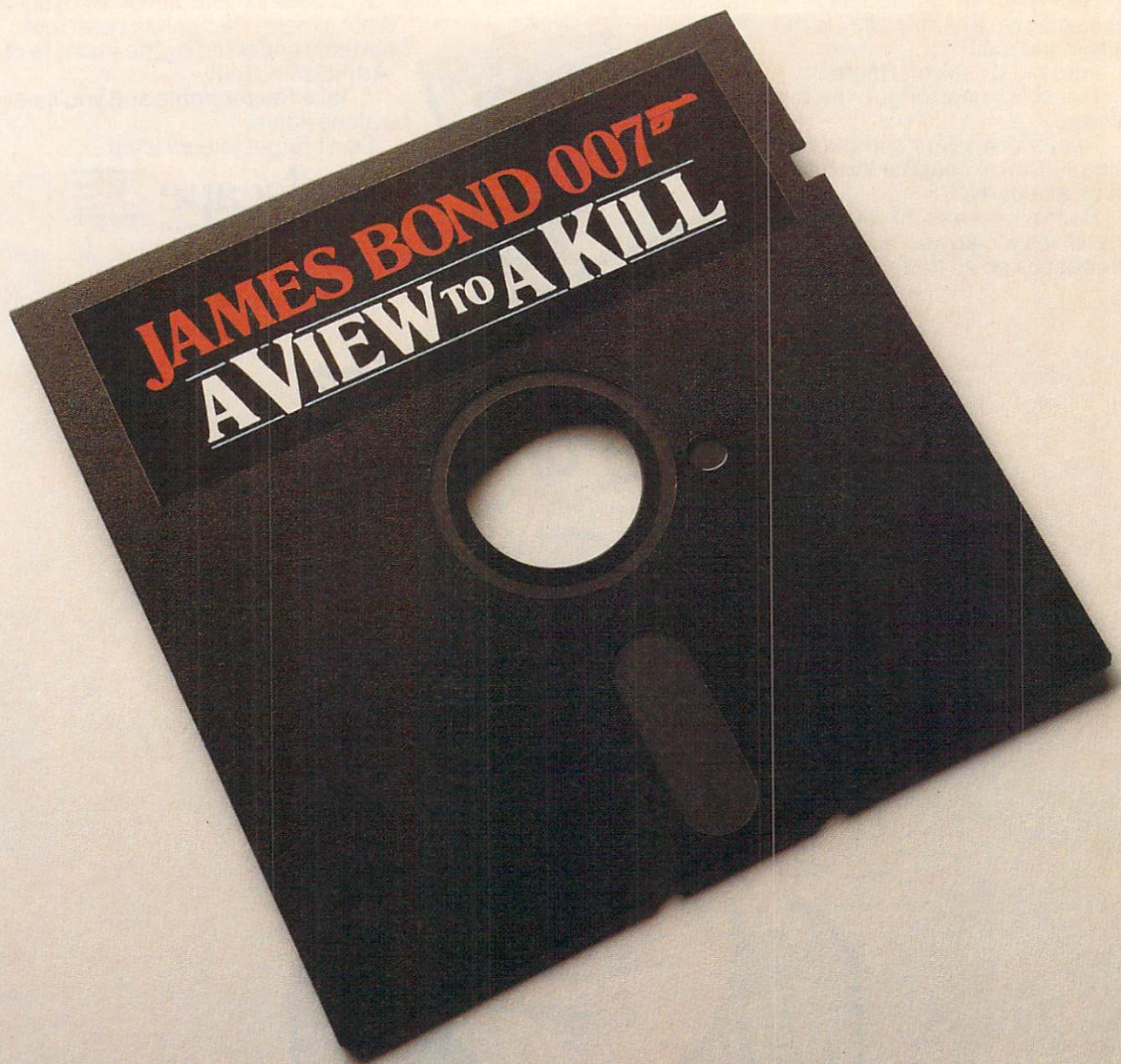
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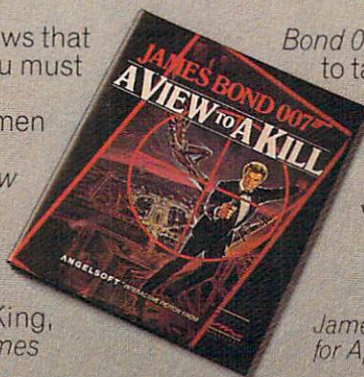
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LETTERS

DOES THE PCjr HAVE A FUTURE?

I recently renewed our subscription to your magazine as I have found no other computer magazine as readable, useable, and enjoyable.

I was very pleased to see your feature on the IBM PCjr. We are owners of the jr and were surprised and chagrined when IBM decided to discontinue it. I was concerned that software for this computer would come to a screeching halt, thus leaving us (and many others) in the lurch. We had hoped this system would grow with our 12-year-old daughter.

MONDE MATTIOLI
Corvallis, Oregon

EDITOR'S NOTE: Although IBM chose to discontinue the IBM PCjr, we have been pleased to see the PCjr software pool still increasing. New packages designed for the home market are in many cases compatible with both the PC and the jr. Check out our software reviews in What's In Store to help you keep your system growing apace with your daughter.

WASTED TIME AND ENERGY?

I enjoy your magazine very much. When you published Com-Grafix in the March issue, I felt as though I had typed in all this data just to do the Hi-Res Hat program. If you can print a Hi-Res program every month for the Com-Grafix, then people who typed in the program will know all that time and energy didn't go to waste.

THOMAS ANGELLI
Kearny, New Jersey

EDITOR'S NOTE: We are glad to hear you enjoyed Com-Grafix so much. As we explained in the introduction, it was designed as a programmer's utility to aid you in adding hi-res graphics into your own programs. We would love to see any reader-written programs that make use of the Com-Grafix utility for possible publication in the magazine. If you've tried your hand at designing such a program, send it to: The Programmer, FAMILY COMPUTING, 730 Broadway, New York, NY 10003.

MISTAKEN ADVENTURE

I have been reading your magazine for about a year and a half and have enjoyed it immensely. My favorite section is the Games column. Whenever I receive your magazine, I read that section first. At about the same time I subscribed to your magazine, I purchased Telengard by Avalon Hill. In your September issue, you

credited SSI with creating Telengard. Have they also marketed a program by the same name?

CHRISTIAN D. WRIGHT, 13
Camden, Delaware

EDITOR'S NOTE: Telengard is indeed an Avalon Hill Microcomputer Games product. It was incorrectly credited to SSI. Thank you for bringing this to our attention.

GREAT ERROR-FREE PROGRAMS

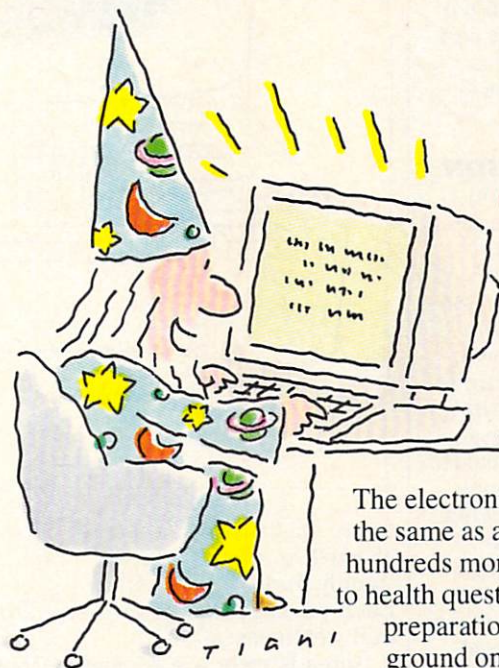
Your magazine (K-POWER especially) has the least mistakes so that your

programs usually run correctly "the first time" compared to some of the other magazines. Your mini K-POWER section's Tune Generator did work the first time.

Your Father's Day Card was especially important to me as our married daughter, Michelle, was here and I asked her to use this program for Father's Day. I was interested to find out just what her own ideas were about me. This helped in our communication. And Renegade Robot was excellent value. Keep them coming!

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CIRCLE READER SERVICE 21

HOME/MONEY MANAGEMENT

COMPUTERIZE YOUR FAMILY'S MEDICAL HISTORY

Turn Recordkeeping into a Painless Process with a Spreadsheet or Data Base

BY ROBIN RASKIN

When was the last time you had a tetanus shot? Has your 9-year-old ever had the measles? When did the family dog have his last rabies shot?

The answers to these questions may not seem important now, but they will be when you least expect it, say if you step on a rusty nail, or if a measles epidemic breaks out in your son's school. Perhaps it will be the day the dog takes a nip out of the next-door neighbor during a "friendly" game of catch with the Frisbee.

As most family physicians will tell you, a thorough medical history can go a long way toward helping you keep track of and prevent illness—and that's nothing to sneeze at.

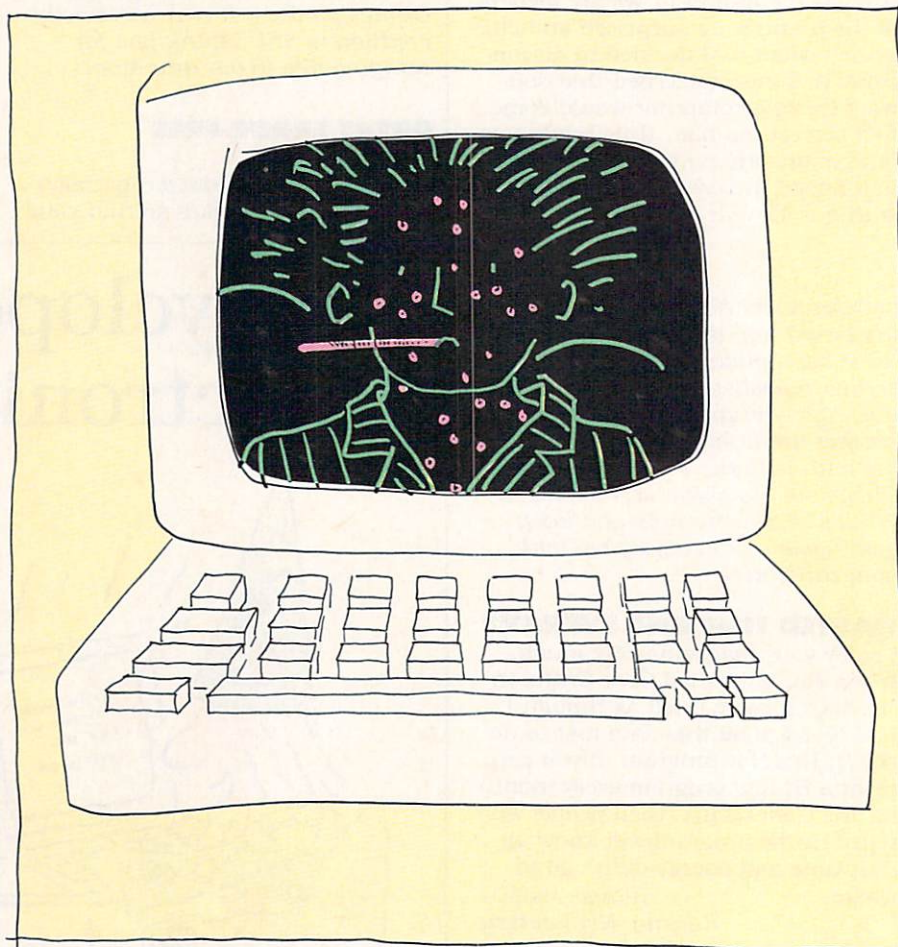
A COMPUTERIZED SOLUTION

Unless you're a statistician, you probably don't remember all the details of your own medical history, much less other family members' waking moments. I know I don't. So I finally decided to rely on the computer's memory instead of my own. You may want to do the same thing.

You'll probably find, as I did, that a computerized recordkeeping system will be more complete and easier to manage than a handwritten one. Your first step will be to decide what type of software to use. Don't be misled into thinking you must purchase the "Rolls-Royce" of software to set up your medical records. Almost any data base or spreadsheet will suffice. If you don't already own a data-management program, ask to have several demonstrated before you buy. If you intend to use the software for other applications, particularly business, you might want to inquire about the new integrated packages that combine spreadsheet and data base features.

More important, consider what capabilities you want from your system. Are graphics important? Do you want to be able to do simple arithmetic? Will you need to retrieve your information based on many dif-

ROBIN RASKIN, a contributing editor to FAMILY COMPUTING, wrote this month's Telecomputing column.



ferent criteria or just a few? What else will you use the program for (family budget, coin collecting, etc.)? Each package has its own strengths and weaknesses.

Spreadsheets are general-purpose organizers often used with business applications in mind. When you work with the spreadsheet as a data base, it is helpful to think of each row as a record, and the columns as fields.

Data bases make you define records more strictly, but are better

when there's a lot of nonnumerical data to be stored. They can do some fancy retrievals. You're also less likely to make an entry error, because you often specify the kind of info you're putting into a field (numerical vs. alphabetical). Spreadsheets, on the other hand, will accept any data you type in a row or column.

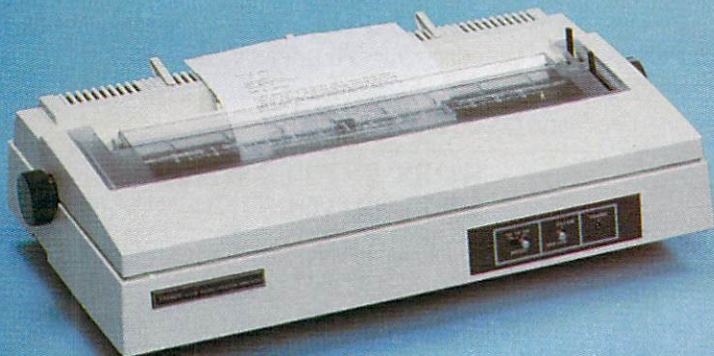
DESIGNING YOUR SYSTEM

Put some serious thought into the design and organization of your system. Accessing your data can only be

KIDS' MEDICAL RECORDS								
DATE	FAMILY MEM.	IMMUNIZ.	ILLNESS	PRESCR.	OFFICE COST	PRESCR. COST	INSURANCE	COMMENT
02/02/81	KARI	TET. TOX.	SNIFFLES		50		0.75	
15/02/81	ARLI				50	25	0.85	VERY SORE ARM
05/03/81	KARI			GASSY				APPLESAUCE
28/03/81	KARI		BRUISE/EAR	BACITRACIN		7		
15/04/81	KARI	DPT			25		0.5	LOW TEMP
12/06/81	ARLI		EARACHE	ERYTHROMYCIN	100	45	0.85	DIA/YOGURT
01/08/81	ARLI		RASH	CALAMINE				SUMAC!

Part of my medical records data base (produced on Lotus 1-2-3).

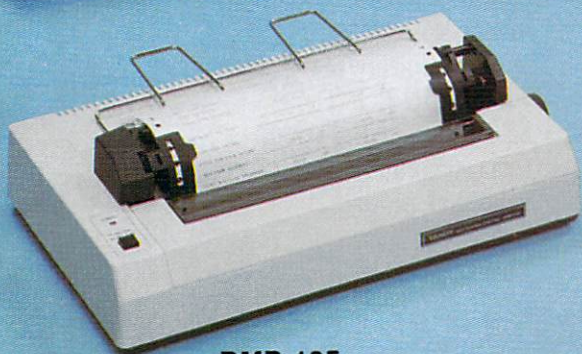
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CIRCLE READER SERVICE 42

[SEE PREVIOUS PAGE]

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HOME/MONEY MANAGEMENT

as useful as its preliminary organization. Ask yourself what sort of information you want to retrieve and create categories for it.

Using the spreadsheet in the integrated package *Lotus 1-2-3*, I set up the following categories: DATE (day/month/year), FAMILY MEMBER, IMMUNIZATION, ILLNESS, PRESCRIPTION, OFFICE VISIT COST, PRESCRIPTION COST, PERCENTAGE PAID BY INSURANCE, and COMMENT. Not every record will have all these items filled in. (You might want to add other categories, such as LENGTH OF HOSPITAL STAY, NAME OF DOCTOR, NAME OF HOSPITAL, etc.)

For example, one record might state that my daughter Kari had a DPT (diphtheria, pertussis, tetanus) immunization on 15/4/81. It cost \$25 and 50 percent was reimbursed by the insurance company. You might also use the COMMENT field to note that she had a mild reaction and ran a low-grade temperature.

A page of entries may be easily scanned, allowing quick access to information (see previous page).

I didn't limit my recordkeeping to basic information; I tossed in my children's developmental milestones such as TOOK FIRST STEP. I even included the family dog's veterinary records. This may seem like overkill, but it's easier to delete categories or fields from your data base than to add them later.

Once you've established your format, take another look to make sure you haven't omitted anything. If I learned anything in setting up a data base it was to overcategorize. If you have a name as a piece of data, enter it twice as FIRST NAME and LAST NAME. If you combine both in one listing under NAME, you won't be able to alphabetize your list according to last name.

Be on guard against other potential problems. The first time I organized our records, I couldn't figure out how to sort by date. Since I recovered various slips of paper from my drawers, not much of it was in chronological order. I tried sorting my dates as numbers, but that didn't work at all.

After a consultation with my computer-savvy husband, I returned to the data base and tried sorting them alphabetically. It worked, because luckily I had filled out my dates with zeros and put them in DAY/MONTH/YEAR format.

If your data base design is the "brains" of the operation, then the data itself is certainly the "brawn." There's not much comfort I can of-

fer, except the sooner you get started, the better off you'll be.

SEARCHING FOR RECORDS

Once you've typed in and saved your data, you'll be able to use your family's medical history as a resource guide. With a spreadsheet, you'll be able to scan a good portion of your records at once. However, with many of the traditional data bases, only one medical record will appear at a time.

If I wanted to check when Arli, another daughter, had her most recent bout with bronchitis, I would more than likely go directly into my spreadsheet and glance through the ILLNESS column until I spotted the last bronchitis entry.

Of course, there are times when data entry will be more complicated. For example, I've totaled the costs in the OFFICE VISIT column to determine our annual medical expenses. (Unless your data base does math, calculations like this are easier if you're using a spreadsheet.) I've also selected columns to print so I can come up with printed lists of each kid's immunizations or illnesses without having to print out the entire medical history. And I can ask the data base (if I ever need to) to give me a list of the children who've had mumps and measles, but not chicken pox. (Be aware that not all spreadsheets have a search function, or, if they do, they may not be as extensive as *Lotus 1-2-3's*.)

I can even search for phrases like FIRST TOOTH in the COMMENT column rather than read through all my remarks. Searches, however, call for rigid matches. For example, if you used the word TEETH instead of TOOTH to query the computer, it wouldn't be able to retrieve your information.

We've been fortunate. Neither our children nor our dog has used much memory in our medical data base. Of course, there was the time Sam, our dog, developed hematomas on his ears after a fight, and the kids have certainly had their share of bronchial and ear infections. Overall, their illnesses have been routine. But it's still nice to know that the information is readily available for the family doctor, school nurse, or camp director if need be, and that once the information is stored, it's there for life.

At year's end, you and your family can sit back, scan your medical records, and, hopefully, count your blessings instead of your medical bills. **FC**

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CIRCLE READER SERVICE 47

**From America's #1
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TELECOMPUTING

SHOPPING IN ELECTRONIC STORES

Sick of Crowds? Tied Up at Work?
Want to Compare Prices? Go Online and Browse.

BY ROBIN RASKIN

Online shopping lets your fingers do the walking—at the computer keyboard instead of in the Yellow Pages. Stereos, best-selling books, vacations, gourmet chocolates, appliances, drugs and cosmetics, even satellite dishes can be investigated and ordered using your personal computer.

For those with little patience for salespeople, miles of aisles, and a commute to the local store, shopping via computer is a blessing. For others, it's an expensive gimmick, partly because you can't view the goods before purchasing, and partly because of the intricacies and costs of using online services.

SHOPPING GEAR

Online shopping services are generally accessible through information networks, though some can be accessed directly. You need a computer, a modem, telecommunications software, and membership with a shopping or information service (see listings).

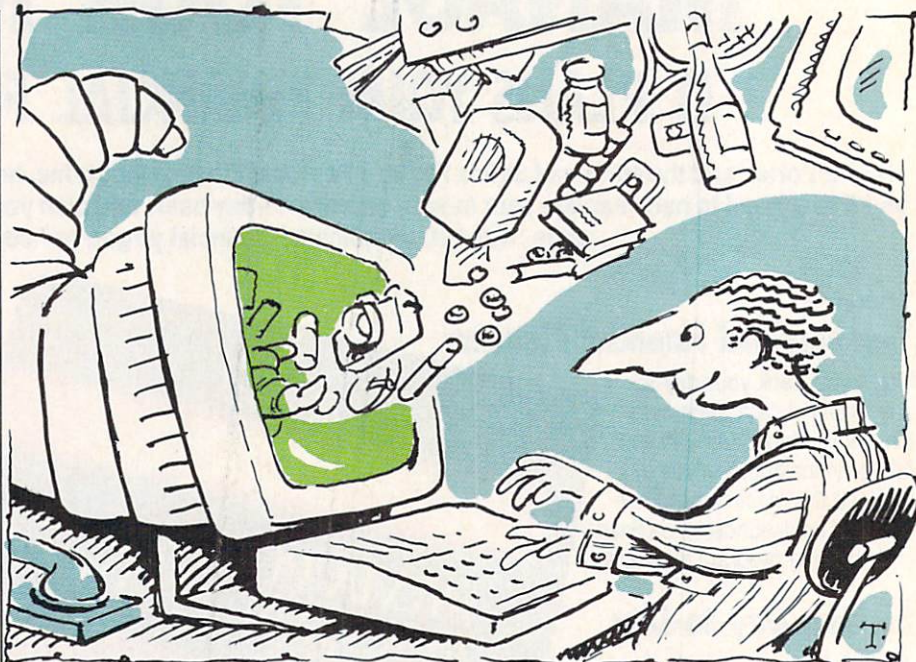
Twenty-four hours a day, seven days a week, these "electronic stores" display their inventory of goods. You can browse and buy through a series of choices from simple menus.

"It's a cheaper and a more convenient way to shop for me," says Allison Davis, a writer/producer on NBC's "Today" show. "I'm a catalog shopper anyway; I don't like stores much," she says, adding, "The computer has taken away all the worry."

Davis, who also banks by computer, says she sits down once a month to do that and her shopping. She bought her mother a VCR last Christmas that way, sent gifts to friends and relatives, and saved \$40 on a television for her father-in-law.

James West, a 26-year-old engineer from Stamford, Connecticut, is another online shopping fan. "I love it," he says. "I've bought software, tools, and researched television prices online. I compare prices with local discount stores."

Contributing editor ROBIN RASKIN's last article was "Upgrading" in the June 1985 FAMILY COMPUTING.



West says he only regrets not being able to view or get very detailed product specifications of the item offered online. Davis, who recently moved into a new house, adds that she is scared to buy silverware online because she's not sure how it will look in her dining room.

TECHNIQUES

Online shopping requires the cultivation of new skills—much the same as those used for searching through any large data base. You proceed through screen menus to find a specific store or item—to return to the same spot at a later visit, you'll need to remember where it was in the menu system. It's initially as confusing as a visit to a large department store, but electronic shopping gets easier once you learn the floor plan.

Typically, after logging onto the system, you see a main menu that lists goods by product category or retailer. In either case, you can browse through the selections. For instance, the main menu on Comp-u-store On-Line, which you can access through various information services, lets you choose from such cat-

egories as appliances, cameras and accessories, sporting goods, etc. At that point you can comparison shop among name brands.

Other services (such as Compuserve's Electronic Mall) list individual retailers, such as Waldenbooks or Record World, and their offerings. To place an order, you select an item and then complete an online order form detailing payment (usually credit card, sometimes check) and shipping information.

CONSUMER EDUCATION

Online shopping can provide a good education in consumer goods. Using Comp-u-store, I got a sense of the price spectrum for new ovens much more easily than I could have by studying newspapers. I also learned about the benefits and disadvantages of convection ovens on Comp-u-store's hotline, an online consumer report that looks at specific products.

Probably the main advantage of online shopping is the ability to research a product category you're interested in. As with any large data base, you can access the product information you want when you need

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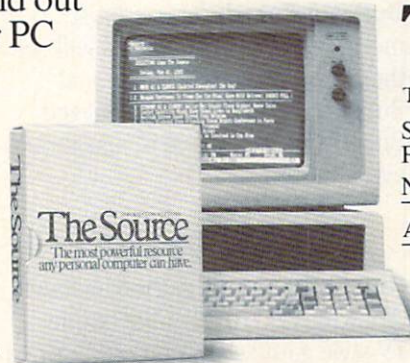
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it. For instance, you can check prices on new cars, or ask for a listing of all 19-inch color televisions with remote control and stereo broadcast capabilities that sell for less than \$500. That's information you couldn't get by walking into most stores.

In some cases, you can even leave electronic mail for store or product representatives and ask for more details.

GOOD DISCOUNT PRICES

Another advantage of online shopping is low prices. Manufacturers have no advertising costs, sales staffs to pay, or storefront rent. Electronic "stores" don't need to stock

inventory, since the products are usually available directly from the manufacturer. All this can translate into lower costs for customers.

The online shopping services boast anywhere from 25 to 60 percent savings over conventional retailers. I found the online prices similar to those in most mail-order catalogs and discount houses, but occasionally they were higher. However, even if you don't have time to bargain hunt around town, you can still be reasonably sure you're getting close to rock-bottom prices on most goods you buy electronically.

Unfortunately, you can't judge the cost of online shopping by the price of the item alone. Depending on

your communications skills and the speed of your modem, "foraging" costs can add up. First, you need to subscribe to an information service (though it's probably not worth joining for the shopping feature alone) and sometimes you'll have to pay an additional membership fee. Then you pay "connect time" (i.e., the time you spend online).

Many people, depending on where they live, must also either make long-distance calls or use a computer-communications network like Tele-net or Tymnet, which charge \$10 an hour daytime, \$2 an hour nights and weekends, to get online.

If you shop at 300 baud, as I did, you can get frustrated waiting for the menus to unfold. You slow down further if you enter the wrong "shopping aisle" and then must backtrack to a previous menu. Searching for product information online can take hours, when often a phone call or a store visit would be cheaper, faster, and more productive.

In a "real" store, browsing and ordering don't cost anything. Online expenses are also likely to be higher than car or bus fares and parking.

WORTH A THOUSAND WORDS

Online shopping services are entirely text-based. They rely on words to describe products, which is not how most people are used to shopping. You don't see the products live or with photos. (Comp-u-store, however, does send brochures to customers, much like a direct-mail house.) And when you shop for an item such as a television, you want to see what the picture looks like, not just read a measurement giving screen size.

"Simply put, electronic shopping requires trust," says David Rothman, author of *Silicon Jungle* (Bantam Books, 1985). "And you can't trust characters on a green screen the way you can a human voice" or picture, he adds.

Unless you're already familiar with a specific product or category, online shopping is a good way to do research—but not necessarily to buy. "I even thought about ordering a car online," says Davis, "but that was too much!"

And when you do order the goods, there's no guarantee you'll get them quickly. In this sense, you have no electronic advantage over foot-weary mall-goers. Even though your order is theoretically placed with the man-

ONLINE SHOPPING SERVICES

American Express® Advance. American Express Travel Related Services Co., Inc., Interactive Services, American Express Plaza, New York, NY 10004; (800) 327-2177.

The service offers products from the American Express catalog and subscriptions to 150 popular magazines.

Cost & Access: Available only to American Express cardholders. No fee for use. Access via CompuServe (address below) and Dow Jones/News Retrieval (P.O. Box 300, Princeton, NJ 08540; [800] 257-5114; [609] 452-1511). Payment by American Express card.

Comp-u-store On-Line. 707 Summer St., Stamford, CT 06901; (800) 843-7777.

Founded in 1982 as a division of Comp-U-Card, the nation's largest electronic merchandising service, Comp-u-store has over 31,000 members who choose from 60,000 items listed by product category or feature.

Comp-u-mall, from the same company, lists those goods by retailer, including Saks Fifth Avenue, Neiman-Marcus, Hickory Farms, and Omaha Steaks.

Cost & Access: \$25 annual fee for purchasing members, but anyone with a subscription to CompuServe, Dow Jones/News Retrieval or The Source can browse without buying. There is no membership fee for the first year through Dow Jones/News Retrieval. Direct access (without going through an information service) costs \$18 an hour weekdays, and \$5 an hour nights and weekends. Payment by credit card or check.

The Electronic Mall. CompuServe, 5000 Arlington Centre Blvd.,

P.O. Box 20212, Columbus, OH 43220; (614) 457-8650; (800) 848-8990.

The Electronic Mall, a joint venture of CompuServe and L.M. Berry, publisher of the Yellow Pages, lists about 80 merchants, including Sears Roebuck, Waldenbooks, and Record World.

Cost & Access: No fee for service. Available through CompuServe, the start-up kit costs \$39.95. Access charges are 10–21 cents a minute nights and weekends for 300/1200 baud, and 20–25 cents a minute primetime for 300/1200 baud. Payment by credit card.

OTHER NETWORK OFFERINGS

CompuServe (see address above).

Includes Fifth Avenue Shopper (features goods from leading shops and boutiques); MicroShoppe (microcomputer supplies and accessories); New Car Showroom (new car prices); Prime Time Radio Classics (old radio programs on cassettes); Savings Scan (30 percent to 70 percent savings on selected items); and Travelshopper (offers information on airline routes and prices, and lets you buy tickets).

Delphi. 3 Blackstone St., Cambridge, MA 02139; (617) 491-3393.

Grapha Com On-line sells computer hardware, software, copiers, and office furniture at discount prices; Wine On-Line sells wine, books, and accessories.

The Source. 1616 Anderson Road, McLean, VA 22102. (800) 336-3366; (703) 734-7500.

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ufacturer immediately, your purchase will arrive anywhere from one to four weeks later. The products I ordered took even longer. So shopping in advance for special occasions is still necessary.

Finally, you may encounter petty annoyances or feel you've been led astray. In CompuServe's Electronic Mall, for example, you can make a menu choice to "enter" Bloomingdale's, a potential treat if you don't live near an outlet. But, once there, all you can do is order a catalog.


A COMPELLING WAY TO SHOP

Despite all these drawbacks, shopping online is still compelling. Hours

fly by like minutes when I explore the many electronic stores.

After I learned my way around and saw what was available, I saved money, time, and untold aggravation by shopping online. I also gained access to important price-comparison information. In an hour on CompuServe, I ordered a best-selling book, hard-to-find children's records, and some fancy croissants for my parents' anniversary. This would have taken a full day using traditional shopping avenues.

Computer shopping has started to catch on, but not as quickly as many thought it would. It's still in its infancy as a valid consumer service. As modems transmit informa-

tion faster, and videotex services begin to merge graphics with text, computer shopping will probably blossom. Until then, the shopping "pioneers" are forging the way. 


APPLE EXECUTIVE LIVE IN CONFERENCE

Dave Coté, consumer marketing manager at Apple, will be the guest at a live conference in the FAMILY COMPUTING Forum on Sunday, Nov. 24 to answer questions about Apple's NEWS products (see "Buyer's Guide" in this issue).

FAMILY COMPUTING's Forum on CompuServe (GO FAM 200) is operated via modems supplied by Hayes Micro-computer Products, Inc.

You can leave messages for FAMILY COMPUTING there or on The Source (TI5483).

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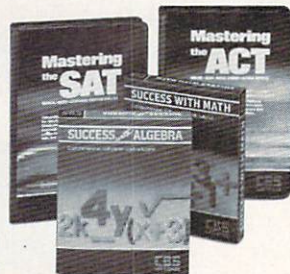


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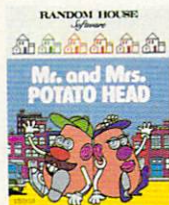
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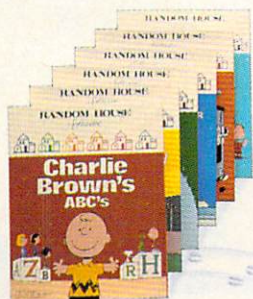
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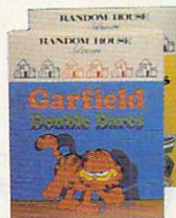
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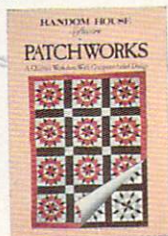


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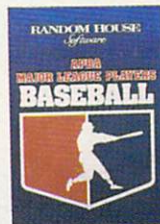
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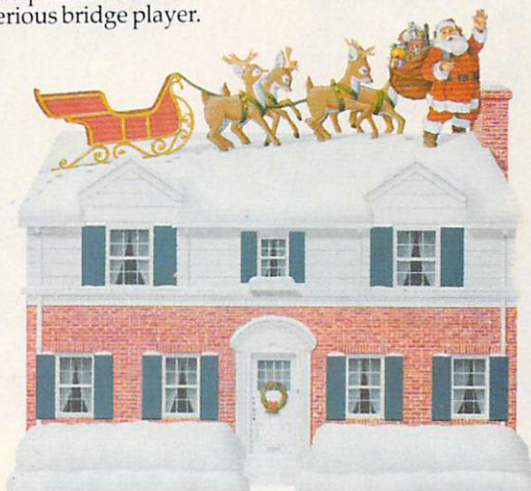
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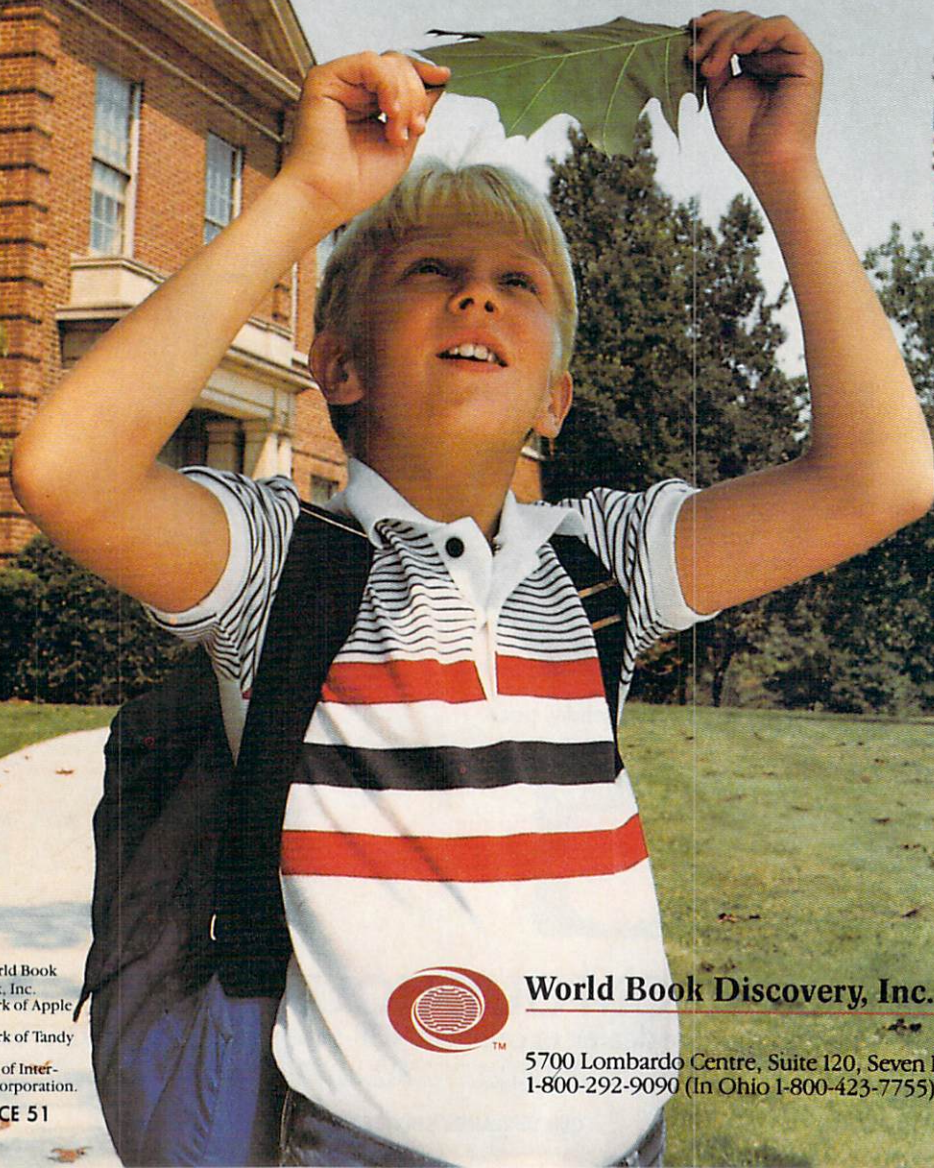
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HOME-SCHOOL CONNECTION

PRESCHOOLERS, PARENTS, AND SOFTWARE

Young Children Can Reap Learning Rewards When Teamed Up With Computers and the Right Programs

BY CHRISTINE Z. CATALDO

Many parents buy a computer, hoping it will benefit very young children. The presence of the computer, some parents believe, will familiarize children with computer technology as well as help them perform better in school. Most educators, however, counsel parents of preschoolers to buy a computer only if they will put it to a primary use of their own. This introduces the child to the computer as a tool.

How can we determine the computer's benefits for preschool-age children? A project at the Early Childhood Research Center (ECRC) at the State University of New York at Buffalo can provide some answers. The researchers directing the project are Dr. Christine Cataldo, associate professor in early childhood education; Dr. Teresa Rosegrant, assistant professor in early childhood education; and Dr. David Farr, professor in educational psychology. This article is based on Dr. Cataldo's report of their findings.

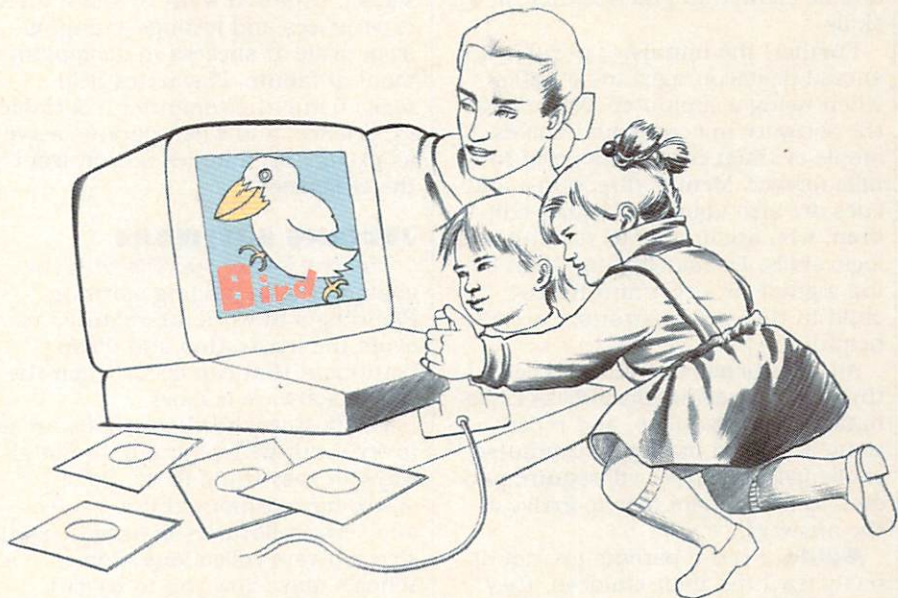
Microcomputers and preschoolers are a natural combination, everyone knows—they're just about the same age. But a successful combination requires two vital ingredients not always easy to come by: an involved adult and good software. Both are absolutely essential.

WHAT THE KIDS WANT AND GET FROM COMPUTERS

Our observation of 300 children over a period of two years produced some consistent conclusions about what kids want and get from using computers.

It's apparent that children find certain basics irresistible. The first of these is *control*. Most young children love the feeling of independence they get when they direct the computer. One form of control a computer gives is the power to *repeat* (to a point no adult could tolerate) something that fascinates a child.

Computer *feedback* is another feature kids respond to. But while sound, color, and animated responses



es are all important, children only appreciate them if they are meaningful parts of a program.

Related to both control and feedback are the *concrete results* children can see from their efforts. Favorite software for kids often provides a print option or at least the chance to save work. It's very gratifying for children to be able to go back to what they've done, either in print form or on the computer.

Another important benefit of the computer for young children is *assistance and support*. The computer serves as a gracious, patient teacher.

Long-term computer use seems to improve learning behavior in several ways. The sense of competence children gain from successful use of the computer results in an increased willingness to take risks, test new ideas, and better focus on tasks. Children are serious about using both computer hardware and software. They want to use the keyboard like the adults around them do. And they want software that makes sense.

THE ROLE OF PARENTS

Parents also are critical to the success of children with computers because they select their software and affect its use. In our studies, the children often needed help. Even on

the rare occasions when there was independent use or exploration, the children sought to share their discoveries. We concluded that in using computers with preschoolers, there is no escaping the need for ongoing adult participation.

It may even be that the help of mothers and fathers is just what it takes to make a child's computer use enjoyable and successful. If the programs provide content and methods appropriate for good learning and play, parents will be able to expand what children can gain.

There are four basic roles that adults fill in working with preschoolers and software.

Supervisor. From the moment a toddler approaches an expensive piece of machinery, such as a computer, parents must adopt the role of supervisor. To avoid damage to the computer and software, as well as to protect children from electrical shock, there need to be household rules related to computer use. In their roles as supervisors, parents also informally evaluate software, make future purchasing decisions, and take care of maintenance problems, including the need for any software replacements.

Teacher. This is the most significant role parents play in their involvement with children. Preschool-

HOME-SCHOOL CONNECTION

ers have to be taught to depress the keys using one finger and a quick press-and-lift motion. They have to understand the need to find one specific key required by the program and to avoid accidentally leaning on other keys. If a joystick is included, they have to be taught how to use it and be allowed to practice their new skills.

Further, the impulsive preschooler should be encouraged to be patient when using a computer. Waiting for the software to boot is just one example of when computers seem to take forever. Menus, directions, and cues are also taxing for young children, who are limited in reading and logic skills. Demonstrating, then being a guide or a restraint for the child in times of frustration, are all helpful.

Adult patience is a must to get through the seemingly endless explanations, clarifications, and repetitions. Children may meet unlimited challenges, but they will require parents to teach them how to arrive at the answers.

Guide. Even if parents are not directly teaching their children, they are likely to find themselves involved in guiding them through their activities. Some programs require adult participation, others include timed tasks or require a parent's encour-

agement to try something new or challenging.

Playmate. Most preschool software contains strong elements of play designed to keep the child interested in a work or learning activity. At home, parents have to be the playmates so readily available at school. Children want to share their experiences and feelings—ranging from pride at success to disappointment at failure. Playmates help make using the computer a sociable experience, and when parents serve as playmates, families benefit from the closeness.

JUDGING SOFTWARE

The real key to success with the computer is in judging software. Planning and work are required to avoid the frustration and disappointment that can occur when the wrong software is used.

The best way to choose software is to try it out with your child—not always an easy thing to do. Some stores have demonstration copies, and certain libraries maintain extensive software collections. Some schools may allow you to try out their software, or at least share findings with you.

Friends and neighbors may also be a good source of information, and may even provide an opportunity to

actually see a program in use.

If you can't find a way to actually try the product, read reviews and recommendations carefully. For example, look for endorsements from educational groups. Also check for an indication that the software was used by children over a period of time, not just looked at by an adult sitting in an office. In any case, look for information on the level of development required by the program, value to the child, and degree of parental assistance required.

There's no getting around the need for effort by parents to sort out the best programs aimed at young children. Many are too difficult for preschoolers; nor do children enjoy all of them. Very few programs are good for both learning and play, and each is important in a child's healthy development.

Of course, not every activity should be translated for the computer. And some children won't want to use the computer at all. It takes parents' good judgment to determine the best course. In many cases, the benefits will be obvious, and, on occasion, a giant developmental step may result from using a program. But, for the most part, it will be parents (with effective use of computer technology) who will get the credit for helping their youngsters. **RE**

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Title	Publisher	Description	Hardware/Price	Rating
<i>Body Awareness</i>	Learning Well	Body parts and clothing-match game	48K Apple; \$50	*
<i>Charlie Brown's ABC's</i>	Random House	Very humorous letter-recognition program	48K Apple, C 64; \$30	***
<i>Delta Drawing</i>	Spinnaker	An introduction to draw-programming	48K Apple, 16K Atari, C 64, 124K IBM PC w/graphics card/PCjr; \$24-\$40	**
<i>Early Games</i>	Springboard	Simple counting tasks with charm	48K Apple, 48K Atari, C 64, 64K IBM PC/PCjr; \$35	***
<i>Ernie's Quiz</i>	Apple	Uses popular Muppets	64K Apple; \$25	**
<i>Facemaker</i>	Spinnaker	User builds faces, then controls them	48K Apple IIe/II+, 48K Atari, C 64, 64K IBM PC/PCjr; \$21-\$25	***
<i>Gertrude's Secrets</i>	The Learning Co.	Varied sorting and matching tasks	48K Apple, C 64; \$45	*
<i>Hey Diddle Diddle</i>	Spinnaker	Uses nursery rhymes to read	48K Apple IIe/II+, 32K Atari, C 64, 64K IBM PC; \$30	*
<i>Hodge Podge</i>	Dynacom	A "press-any-key" exploration program for a first experience	48K Apple, 32K Atari, TRS-80 Models I/III/4; \$15-\$19	**
<i>Kidwriter</i>	Spinnaker	Great for writing stories with pictures	48K Apple, 16K Atari, C 64, 64K IBM PC/PCjr; \$27-\$30	***
<i>Kindercomp</i>	Spinnaker	A mixture of learning activities	48K Apple, 16K Atari, C 64, 64K IBM PC/PCjr; \$21-\$30	*
<i>KoalaPainter</i>	Koala Technologies	Many-faceted drawing program	48K Apple IIe/IIc, C 64, 128K IBM PCjr, KoalaPad included; \$99-\$150	***
<i>Listen to Learn</i>	IBM	A voice/writing program	128K IBM PC and compatibles; \$347-\$447 with Echo speech synth. Apple version available from Scholastic.	***
<i>Make-a-Match</i>	Springboard	Varied sorting games	48K Apple, 48K Atari, C 64, 64K IBM PC/PCjr; \$30	*
<i>Music Maestro</i>	Springboard	Challenging, but fun, for melodies and sounds	48K Apple, 48K Atari, C 64, 64K IBM PC/PCjr; \$35	**
<i>The Print Shop</i>	Broderbund	A sign-maker program for all ages	48K Apple, 48K Atari, C 64, 128K IBM PC/PCjr, 512K Mac; \$45-\$80	***
<i>Snoopy's Reading Machine</i>	Random House	Characters use word-families	48K Apple, C 64, 128K IBM PCjr; \$30-\$40	***
<i>Stickybear ABC</i>	Xerox-Weekly Reader	Charming graphics to explore letters and words	48K Apple, 48K Atari, C 64; \$30-\$40	**
<i>Stickybear Numbers</i>	Xerox-Weekly Reader	Delightful for numbers	48K Apple, 48K Atari, C 64; \$30-\$40	***
<i>Turtle Tracks</i>	Scholastic	Logo-type programming in draw mode	48K Apple, 32K Atari, C 64, 96K IBM PC, 32K TI 99/4A w/ext. BASIC, VIC-20 w/8K RAM cart.; \$40	*

*Good **Very Good ***Excellent †Selected by the Early Childhood Research Center.

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* See specially marked boxes for details. No purchase necessary. Sweepstakes ends Dec. 31, 1985. Official rules available at participating dealers.

GAMES

PRETZELS AND POPCORN FUN

Boot Up a Tried-and-True Computer Game for a Relaxing Evening With Friends

BY JAMES DELSON

Everybody loves playing games. Sure, there are different levels of expertise and types of games. But whether it's pingpong in the basement, croquet in the backyard, or a crossword puzzle on the couch, gaming is an integral part of our lives.

Everyone has a favorite. More times than not, the preferred choice will be a game you've played many times, whose rules and nuances you've memorized. These games can be a minivacation from the ordinary trials and tribulations of life.

"Pretzels and popcorn fun" is a good term to describe playing these familiar games. It conjures up the image of a relaxed evening with family or friends and a good-natured contest in which the outcome isn't nearly as important as the companionship.

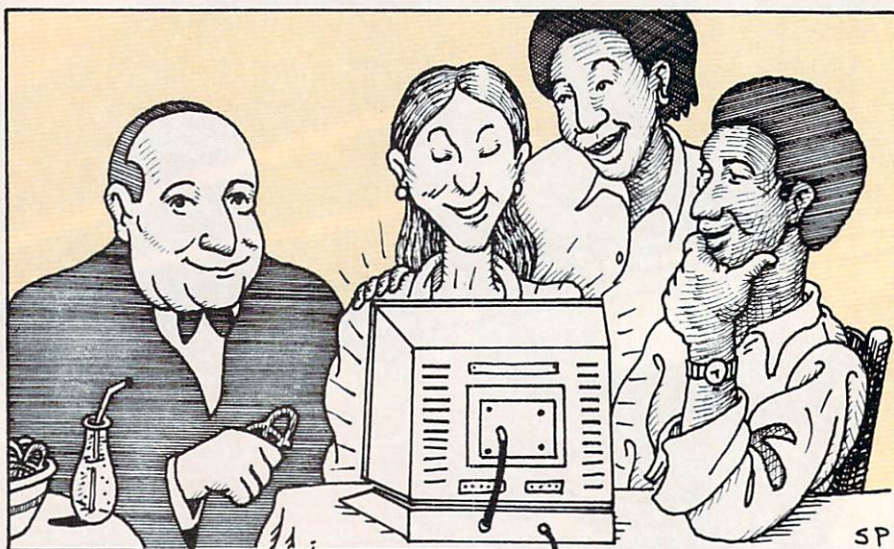
Traditional board games include classics like "Monopoly," "Scrabble," and "Clue"; newer titles like "Trivial Pursuit"; and more esoteric fare, such as "Diplomacy," and "Dungeons and Dragons."

NEW-FOUND TRADITIONS

Then, of course, there's the whole new field of computer games. A burgeoning interest in them has spawned a number of "popcorn programs." That's to be expected if you consider that more computer games have been introduced in the past three years than board games in the last two decades!

Some programs have become cult favorites, including *Diplomacy*, *Archon*, *Lode Runner*, *Rails West!* or *President Elect*. Also enjoyable are newly discovered gems such as *Field of Fire*, *Racing Destruction Set*, *The Ancient Art of War*, or *On-field Football*.

Want to boot up a tried-and-true program with your friends for a night of enchantment? Shall it be a dazzling car race, a plot to rule the world, or simply a campaign to be president? To help choose which one to serve with your pretzels and



popcorn, here's a list of eminently playable games that the hard-working playtesters and reviewers for FAMILY COMPUTING find the most appealing. Like you, these gifted amateurs enjoy relaxing at the end of the day by escaping into a fantasy world.

All games that run on a Commodore 64 also work on a C 128.

Game listings for Atari will not run on the 520ST.

Fast-Playing

Less than two hours

ARCADE

Includes strategy/arcade

These go a step beyond the classic arcade games and require a little skill and strategy to play well.

Archon (Electronic Arts); 64K Apple; 48K Atari; C 64; 64K IBM PC; \$23-\$35.

Archon II: ADEPT (Electronic Arts); 64K Apple; 64K Atari; C 64; \$33-\$40.

B.C. II, Grog's Revenge (Sierra On-Line); C 64; \$35.

B.C.'s Quest for Tires (Sierra On-Line); C 64; \$35.

Beach-Head (Access); 48K Atari; C 64; \$35.

Beach-Head II: The Dictator Strikes Back (Access); 48K Atari; C 64; \$40.

Boulder Dash (Micro Fun/First

Star); 32K Atari; C 64; \$30; 128K IBM PC/PCjr; \$35.

Broadsides (Strategic Simulations, Inc.); 48K Apple; 48K Atari; C 64; \$40.

Jumpman (Epyx); 48K Apple; 48K Atari; C 64; \$18.

Raid on Bungeling Bay (Broderbund); C 64; \$30.

Spy Hunter (Coleco Industries, Inc.); ADAM (cart.); \$30.

Star Raiders (Atari); 16K Atari; \$18.

FLIGHT SIMULATORS

Although these games require many hours of practice, they're easy to play once the basic skills have been mastered.

F-15 Strike Eagle (MicroProse Software); 64K Apple; 48K Atari; C 64; 64K IBM PC/PCjr; \$35.

Flight Simulator (Microsoft); 128K IBM PC/PCjr/XT/AT; \$50.

Flight Simulator II (subLOGIC); 48K Apple; 48K Atari; C 64; \$50; \$40 for Atari and Commodore cassette versions.

Mig Alley Ace (MicroProse Software); 48K Atari; C 64; \$35.

Skyfox (Electronic Arts); C 64; planned for 64K Apple; \$33-\$40.

FINANCIAL

Quick Monopoly-like thrills are achieved in very little time.

Conglomerates Collide (Rockroy, Inc.); 48K Apple; \$30.

JAMES DELSON IS FAMILY COMPUTING'S games critic.

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engineered mutants—stand watch over their creators' technology. And they deal swiftly and ruthlessly with characters like techno-scavengers.

But you've got a plan. If you and your trusty Science Droid can scavenge the right combination of weapons and technology—and get off the planet alive—you'll make it big. Destroy the Guardian base and you'll even be a hero! The treasures of the Ancients are yours . . . if you've got what it takes.

C64/128

ATARI

APPLE

Koronis Rift



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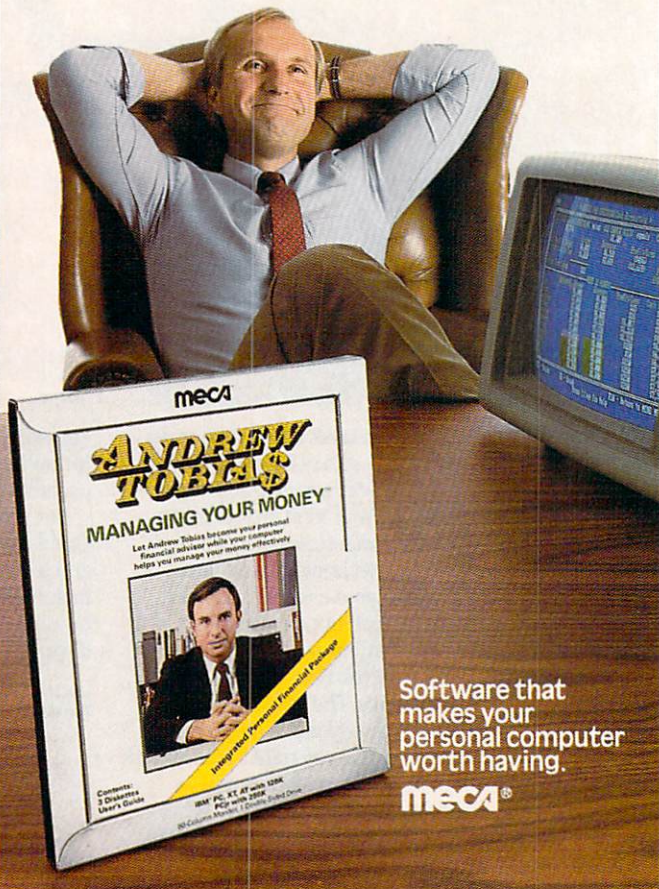
Strategy Games for the Action-Game Player[®]



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GAMES

Fortune Builder (Coleco Industries Inc.); ADAM (cart.); \$30.

SPORTS

Colorful, fast-moving and always fun, for a whole game's worth or even for a few minutes.

The Activision Decathlon (Activision); 16K Atari (cart.); C 64; \$25-\$30.

Julius Erving and Larry Bird Go One-On-One (Electronic Arts); 48K Apple; 48K Atari; C 64; 64K IBM PC; \$33-\$40.

Microsoft Decathlon (IBM); 64K IBM PC; 128K IBM PC XT; requires color adapter; \$35.

On-Court Tennis (Gamestar); C 64; \$30.

On-Field Football (Gamestar); C 64; \$30.

Pitstop II (Epyx); 64K Apple; 48K Atari; \$40.

Summer Games (Epyx); 64K Apple; 48K Atari; C 64; \$40.

CONSTRUCTION SETS

Either as build-it-yourself games (which take more time) or as good old arcade fun, these adventures have great play systems and are never dull.



Lode Runner (Broderbund); 48K Apple; 48K Atari; C 64; 128K IBM PC/PCjr/XT; \$35-\$40.

Mail Order Monsters (Electronic Arts); C 64; \$33.

Mr. Robot and His Robot Factory (Datamost); 48K Apple; 32K Atari; C 64; \$20.

Pinball Construction Set (Electronic Arts); 48K Apple; 48K Atari; C 64; 64K IBM PC; \$23-\$40.

Racing Destruction Set (Electronic Arts); C 64; \$33.

Slow-Playing

More than two hours

STRATEGY AND TACTICS

An evening's stimulating activity or just a true pretzel-and-popcorn slugfest, these games are easy to play once you figure them out.

The Ancient Art of War (Broderbund); 128K IBM PC/PCjr/XT; \$45.

Battle for Normandy (SSI); 48K Apple; 40K Atari; C 64; 64K IBM PC; \$40.

Chickamauga (Game Designer's Workshop); 48K Atari; \$35.

Dreadnoughts (The Avalon Hill Game Co.); 48K Apple; C 64; \$30.

Field of Fire (SSI); 48K Atari; C 64; \$40.

Legionnaire (The Avalon Hill Game Co.); 48K Apple; 32K Atari; C 64; \$30.

Monty Plays Scrabble (Epyx); C 64; \$40.

Operation Whirlwind (Broderbund); 48K Atari; C 64; \$40.

Paris in Danger (The Avalon Hill Game Co.); 48K Atari; \$35.

Reforger 88 (SSI); 48K Apple; 48K Atari; \$60.

Sargon III (Hayden Software); 64K Apple; 64K Atari; C 64; 64K IBM PC/PCjr; 128K Macintosh; \$50.

The Shattered Alliance (SSI); 48K Apple; 40K Atari; \$20.

POLITICS AND FINANCE

These games, I think, are the most rewarding kind to relax with because they're provocative and achieve the maximum amount of player interaction. May last all night.

Cartels and Cutthroats (SSI); 48K Apple; C 64; 128K IBM PC/PCjr; \$40.

Cosmic Balance II (SSI); 48K Apple; 48K Atari; C 64; \$40.

Diplomacy (The Avalon Hill Game Co.); 256K IBM PC/PCjr \$50; 48K TRS-80 Model III or 4; \$25.




Geopolitique 1990 (SSI); 48K Apple; C 64; \$40.

Incunabula (The Avalon Hill Game Co.); 128K IBM PC/PCjr; \$30.

M.U.L.E. (Electronic Arts); 48K Atari; C 64; \$23.

President Elect (SSI); 48K Apple; C 64; \$40.

Rails West! (SSI); 48K Apple; 40K Atari; C 64; \$40.

The Seven Cities of Gold (Electronic Arts); 64K Apple; C 64; 64K IBM PC; \$33-\$40. 

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C64=C/64 Disk IBM=IBM-PC and IBM-PCjr
e=Educational h=Home Use r=Recreational

AP2	ATD	C64	IBM	Name of Program or Item
\$24	\$24	\$24	\$24	r Bruce Lee -OR Lode Runner
\$23	...	\$23	...	r Karateka -OR F15 Strike Eagle
\$35	\$35	\$35	\$33	r Flight Simulator II
...	r Jet (Sublogic)
\$39	\$39	\$39	\$39	r Ultima 2 -OR Ultima 3
\$39	r Ultima 4
\$26	\$23	\$23	\$26	e/r Hitchhiker's Guide- Galaxy
\$26	\$26	r Gato
\$30	\$30	r King's Quest 2 (AP2 Soon)
\$26	\$26	\$26	\$26	r Zork 1 (32k)
\$32	...	\$32	\$32	r Sargon 3
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...	r Summer Games 2
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...	\$36 h	Sidekick (128k)
\$31	\$31	— JOYSTICK: MACH 2 (Hayes)
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...	\$24	\$24	...	— JOYSTICK: Wico 3-Way Deluxe

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\$14	\$12	\$12	\$14	r Murder on the Zinderneuf
\$28	\$17	\$17	\$28	h Music Construction Set
\$25	\$17	\$17	\$25	r Pinball Construction Set
\$28	\$23	\$23	\$28 e/r	Seven Cities of Gold
\$28	...	\$23	...	r Sky Fox

The following are for C/64 disk. Price is \$9 each; 1985:
The Day After; Quest for the Holy Grail; Kikstart (Offroad simulator); BMX Racers; Black Crystal; Se Kaa of Assiah;
Starace; Chiller.

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BY JEFFREY BAIRSTOW

What is the difference between single- and double-density disks?

CHAD BAKER

Chicago, Illinois

Floppy disk drives come in several varieties—single-sided, double-sided, single-density, and double-density. This means they read and write on disks in those formats. Single-sided drives write on only one side of a disk, double-sided write on both sides. Naturally, more information can be stored on a disk used in a double-sided drive.

In addition, there are at least two ways of recording data on disks—single-density and double-density. Double-density recording packs about twice as much information on a disk as single-density does. For instance, Apple II drives, which store 143K, are single-density; IBM PC drives, which store 360K, are double. Some high-performance, double-sided, double-density disk drives can store nearly 1.6 megabytes (1600K) of data!

It's important to know which type of disk drive your computer has so you can buy the appropriate disk. For example, disks for double-sided, double-density drives are usually designated "2S/2D" on the box. This means that the manufacturer certifies that the magnetic coating on both sides of the disk is of high enough quality to record information at double density. If in doubt, ask before you buy. Be assured, however, that you can't harm the drive by using the wrong disk. It just might not work as well as you'd want.

Is there any way to disable and reenable certain keys on the IBM PC, such as NUM LOCK or CAPS LOCK?

STEVEN JAY BLATT

Mt. Shasta, California

A number of keyboard programs make it possible to change the key functions on the IBM PC. Two of the most popular are ProKey (RoseSoft) and SuperKey (Borland International). Both allow you to specify the use of every key on the board—changing NUM LOCK to BREAK, for example, or disabling the NUM LOCK key alto-

gether. You can also change the letter and numeral keys—making 1 respond as 9, turning A into Z, etc. And ProKey and SuperKey also let you program keystroke sequences that can be recalled by pressing a two-key combination (e.g. CTRL D).

In BASIC, function keys are pre-programmed to represent keystroke sequences (for example, pressing F2 has the same effect as typing RUN and pressing ENTER). Using the BASIC KEY command, you can reprogram each function key to produce any series of up to 15 keystrokes.

In some versions of BASIC, the KEY command will also let you "trap" most keys, that is, branch to a special part of your program whenever a particular key is pressed. This method is often used to disable the FUNCTION-BREAK and CTRL-ALT-DEL key combinations.

What is "terminal software" and how is it used?

TROY MONDAY

Oshkosh, Wisconsin

"Terminal software," short for "terminal emulation software," is really just communications software. The name dates back to the days when most computing was done on main-frame computers, accessed by so-called "dumb terminals." Terminal emulation software made it easy to connect a microcomputer to a main-frame by causing the micro to mimic, or "emulate," a dumb terminal.

Nowadays, terminal software is much more versatile. It allows your computer to communicate with your friend's micro down the street as well as with online services such as CompuServe or The Source. You can communicate via phone lines, or by cabling together the two computers' serial ports (if the machines are close enough to each other). And most terminal software goes a step beyond the old dumb terminals by permitting you to send or receive (upload or download) files.

For more information about terminal programs, I suggest you look at *Personal Computer Communications* by Alfred Glossbrenner (St. Martin's Press, New York), a comprehensive, readable book. You can also check out our "Tips on Buying Communications Software" in the March 1985 issue of FAMILY COMPUTING. **FC**

JEFFREY BAIRSTOW is a contributing editor to FAMILY COMPUTING.

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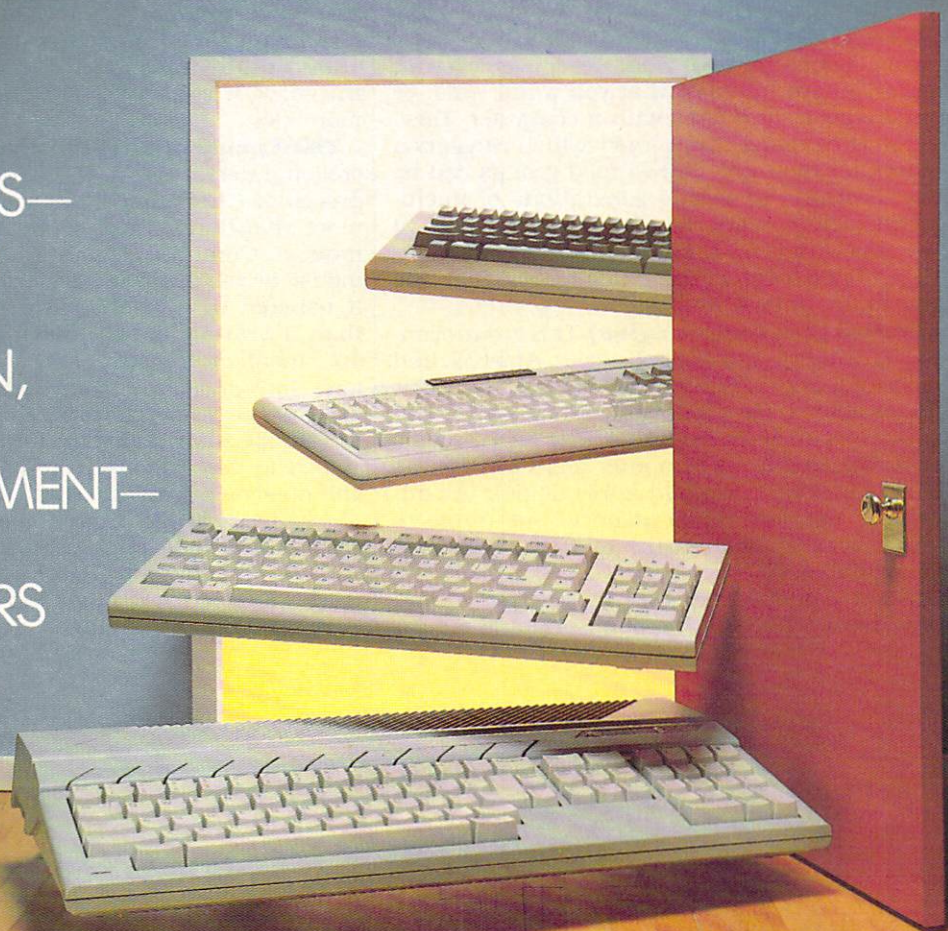
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BUYER'S GUIDE TO GENERAL-PURPOSE COMPUTERS

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ENTERTAINMENT—
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CHOICES



BY JOE GELMAN AND NICK SULLIVAN

The ways of looking at computers change every year. Not long ago, memory was the end-all and be-all. A computer with a gargantuan 64K looked pretty good. Later, it was disk drives. A 64K computer with a built-in disk drive, or sold in a package with an external drive, was the rage. Then, with the advent of Macintosh technology and the

mouse, "ease of use" and "friendly environment" became catch phrases.

All these features are still important. But today, most computers provide enough power to get most jobs done. And as manufacturers, spurred by engineers, added more and more features, buyers—with jobs to do, children to teach, and games to play—have started asking: "Will the computer in the store window work for me?"

How do you answer that?

There was a fairly good reply until recently. You figured out your needs, found the software that fulfilled them,

Joe Gelman has written a number of "Buyer's Guides," including "Computers" and "Low-Cost Printers" in the June and September issues. Nick Sullivan is a senior editor at FAMILY COMPUTING.

then decided what equipment (64K and a disk drive, say) was required to run the software. If you could afford the chosen system, you took an open-minded leap—because how could you be sure you figured right—and lived happily ever after.

Now—just when you thought it was safe to buy that computer you've been researching for a year—some fiery new computers have injected the emotion that's been missing from the marketplace. Suddenly, rational advice doesn't make as much sense.

The introduction of Atari's scintillating ST and Commodore's alluring Amiga, plus enhancements to Apple's marvelous Macintosh, may cause a period of consumer confusion about what to buy. The ST and Amiga are selling for about \$1,000, which is in the ballpark for many consumers, and certainly adds freshness to the marketplace. The happy compromise between manufacturer and consumer, and between price and performance, is still on the horizon. But it's getting closer by the minute.

THREE GENERATIONS

Deciding which computer to buy has never been easy for the first-timer. It's hard to know what you want, need, or like until you've spent some time with a computer. However, the task may be easier if you know which category a particular computer fits into. Three broad groups can be broken down according to several generations of microcomputer technology. For purposes of illustration, we've equated these eras with three common machines—4-cylinder, slant-6, and V-8 car engines. Remember that the biggest engine is not always the best.

First generation (4-cylinder engine). This group of microcomputers—including the Apple II series, Atari XL and XE, Commodore 64 and 128, TRS-80 Model 4 and Color Computer—uses 8-bit microprocessors. They can access 64K of memory at one time, which is why 64K became such a common feature. If the computer has 128K (as the Atari 130XE, Commodore 128, and Apple IIc do), the microprocessor does not "see" it all at once, but transfers back and forth between two banks of 64K—a process called "bank-switching."

First-generation computers began to emerge around 1977 and have been refined to the point of doing almost

anything, except large-scale business tasks. This is why they still sell well. They generally can be used with a television or a monitor, and most have good color graphics and sound for entertainment and educational software. These computers have been around so long that they are well supported with a wide range of software and peripherals. However, their disk storage is lower, disk-access time and execution speed slower, and screen display fuzzier than newer computers'.

Second generation (Slant-6 engine). In 1981, the IBM PC hit the market with a so-called 16-bit (actually "8/16-bit") microprocessor and a 640K capacity. The 16-bit microprocessors run faster than their 8-bit predecessors. Because of extra memory and higher speed, the IBM PC, successors (PC XT, PC AT), and many imitators were adopted as the computers-of-choice by those with business in mind. Many of these 16-bit computers, such as the Compaq Deskpro (see "Buyer's Guide to Business Computer Systems" in the October 1985 issue of FAMILY COMPUTING), have minimal sound and color capability, so they're less adaptable for home use. (The exception is the Tandy 1000.) Yet because they have larger memories, their 5¼-inch disk drives are designed to hold bigger programs and more files.

Third generation (V-8 engine). Though not the first microcomputer to use a 32-bit (actually "16/32 bit") microprocessor (the Tandy 6000 was), the Macintosh attracted more attention because it was designed to be used with a mouse. Combining a high-speed microprocessor, a mouse-driven operating system, and a 3½-inch disk drive, it ushered in a whole new era of computing. For more than a year-and-a-half, Macintosh had the "state-of-the-art" moniker to itself. Recently, Atari and Commodore have introduced similar computers (the 520ST and the Amiga), but with color and a lower price tag—heating up the competition. Software for all these computers is designed to use a mouse, drop-down or pull-down menus, and on-screen windows that can be expanded or shrunk. The software ranges from home to full business packages, with professional applications being the most common and educational software the least. Because these computers have superb graphics and sound, the potential software for them is unlimited.

SOME LEADING GENERAL-PURPOSE COMPUTERS

Model	List Price	RAM: Stand./Max.	Disk Storage	Hardware Included	Software Included	Serial/Parallel Ports	Max. Text Display
Apple IIc	\$1,195	128K	143K	5¼-inch disk drive	ProDOS, BASIC, tutorials	2 serial	80 × 24
Apple IIe Professional System	\$1,795	128K	143K	Two 5¼-inch disk drives, monochrome monitor	ProDOS, BASIC, tutorial	None	80 × 24
Apple Macintosh	\$2,195	128K/512K	400K	3½-inch disk drive, monochrome monitor, mouse	Finder, MacWrite, MacPaint	2 serial	Varies ⁵
Atari 130XE	\$149	128K	127K	None	BASIC	Serial	40 × 24
Atari 520ST	\$799 ¹	512K	360K	3½-inch disk drive, monochrome monitor, mouse, numeric keypad	TOS, GEM user interface, Logo ¹	Serial, parallel	Varies ⁵
Commodore 64	\$149	64K	170K	None	BASIC	Serial	40 × 25
Commodore 128	\$300	128K ²	170K ³	Numeric keypad	BASIC, tutorial, CP/M	Serial	80 × 25
Commodore Amiga	\$1,295	256K ²	880K	3½-inch disk drive, mouse, numeric keypad	AmigaDOS, Intuition user interface, BASIC, Amiga Tutor	Serial, parallel	Varies ⁵
IBM PC	\$2,295	256K/640K	360K	Two 5¼-inch disk drives, numeric keypad	BASIC	None	80 × 25
Tandy 1000	\$999	128K/640K	360K	5¼-inch disk drive, numeric keypad	MS-DOS, BASIC, DeskMate	Parallel	80 × 25
TRS-80 Color Computer 2	\$119	16K/64K	156K	None	Extended Color BASIC (with 64K version)	Serial	32 × 16
TRS-80 Model 4D	\$1,199	64K/128K	368K	Two 5¼-inch disk drives, monochrome monitor, numeric keypad	TRSDOS 6.0, BASIC, DeskMate	Serial, parallel	80 × 24

1. \$999 with RGB color monitor.

2. Manufacturer promises expansion of C 128 to 512K and of Amiga to 8M.

3. The Commodore 1571 disk drive will hold 360K (410K in CP/M mode).

4. Manufacturer promises to add BASIC to language disk.

5. Varies according to font used; some are proportionally spaced.

MAKING A CHOICE

Do you really need the latest-and-greatest computer? That depends on what you expect from a computer. The following capsule reviews of models from the leading marketers of general-purpose computers—good for business, education, and entertainment—will help narrow your choices. The company's current outlook and product line are examined. We don't list peripherals such as printers, modems, or specialized hardware, which are optional and readily available for most models. But be sure to keep these peripherals in mind (if they're not included) when pricing a full system. Figure \$200–\$500 for a disk drive, \$250–\$500 for a printer, and \$200–\$700 for a monitor.

The strengths and weaknesses of each computer are detailed, including our overall impressions of the system. Specific technical details for each computer can be found in the accompanying chart.

No computer is perfect, but some may fit your needs. If the strengths are appealing and the weaknesses unimportant, then that computer belongs high on your list.

APPLE COMPUTER INC.

Apple, once the darling of Silicon Valley, recently has taken its lumps with the rest of the hi-tech industry, and is now looking to settle down for slower but steadier long-term growth. Cofounder Stephen Wozniak ("The Woz") has left the company and sold most of his stock, and cofounder Steve Jobs, while still chairman of the board, has sold much of his stock and been removed from day-to-day operations. John Sculley, brought in last year by Jobs as chief executive officer to stabilize the company, is now the unqualified kingpin of this billion-dollar company.

The problems can be traced to the fortunes of the Macintosh, which hasn't been able to crack IBM's stranglehold on business buyers and has been too expensive for most home buyers. It's selling better than the ill-fated Apple III or Lisa, Apple's two previous stabs at the business market, but falling well below the company's expectations. Meanwhile, the Apple II line, going since 1977 and still selling, proves over and over that it's the product with nine lives. The IIe and IIc are Apple's bread-and-butter in an era of high-powered, mouse-driven Macintosh look-alikes! In fact, a whole line of NEWS (New and Exciting World of

Solutions) products that Apple has just introduced ensure that both the II line and Mac will continue to grow.

APPLE IIe

Strengths. Because the "Woz machine" has been so widely used for so long, there's a vast selection of business, educational, and entertainment software for the IIe. Another of the IIe's strong points is its expandability—the internal plug-in card slots support a wide variety of hardware add-ons (music synthesizers, modems, video digitizers, RAM disks, RGB output, a CP/M card, etc.). To update the IIe to accommodate software that uses a mouse, pull-down menus, and windows, the IIe is now manufactured with the same chips as the IIc. The IIe keyboard has a good, professional feel.

While the standard Apple II disk drives store a paltry 143K, which is a limitation for serious daily use, Apple's new UniDisk 3.5 (about \$500) stores a generous 800K. Used with the Apple IIe Expansion Card and Quark's Catalyst 3.0, a mouse-driven program selector that juggles several programs on your desktop at once, the IIe functions much like the Macintosh in terms of user interface.

Weaknesses. The IIe is high-priced compared with newer, more powerful competitors, and is often sold as a "bare bones" unit that you must configure yourself. For instance, you can expand the memory to 128K (and more, through third-party add-ons or the new Apple IIe Expansion Card) and the video display to 80 columns, but these are extra—not standard—features. Even though the Apple II is known as a good game machine, its built-in sound capability is limited and its graphics are tricky for programmers. The keyboard has only two function keys, making some software difficult to use.

Overall. A proven, though somewhat expensive, computer that's best for those wanting a large software base or for those hobbyists who want access to a wide range of specialized add-on cards. Truly a general-purpose computer—there's not much you can't do with a IIe. And Apple's new UniDisk, Expansion Card, and the software being designed to work with them should keep many existing IIe owners from covetously eyeing new computers.

APPLE IIc

Strengths. The IIc is a stylish, transportable, compact version of the IIe—with extra memory (128K), built-in 80-column capability, built-in disk drive, and serial ports for a modem and a printer. It runs virtually 100 percent of the thousands of software packages that run on the IIe, and some that the IIe doesn't. Its built-in mouse/joystick port automatically figures out which device you have plugged in. The IIc is most often sold with an attractive hi-res monochrome monitor that is good for applications requiring 80-character displays. In short, you get more for the money than with the IIe. The IIc is easy to pick up (it has a handle) and has a nifty carrying case (\$39) that makes it easy to move. Good tutorial disks (included with purchase) help novices get up and running very quickly.

The new Apple Color Monitor IIe/IIc (it works with both and costs around \$400–\$450) can legibly display 80 characters of text. Thus, it's a true crossover monitor that can be used for education, entertainment, and business applications. Used in conjunction with the new high-speed Imagewriter II color printer (about \$600; compatible with the IIe and Macintosh), the IIc can be a complete color solution. Most applications programs, such as *AppleWorks*, will work well with this system; others, such as *pfs: Graph*, are being redesigned to take full advantage of its features.

Weaknesses. The lack of card slots makes further expansion of the IIc difficult. And because of the nonstandard connections, you'll need special cables to connect

Max. Resolution	Cartridge	Colors	Voices	Sprites
560 × 192	No	16	1	None
560 × 192	No	16	1	None
512 × 342	No	B&W	4	None
320 × 192	Yes	256	4	4
640 × 400	Yes	512	4	None
320 × 200	Yes	16	3	8
640 × 200	Yes	16	3	8
640 × 400	No	4,096	4	8
640 × 200	No	16	1	None
640 × 200	No	16	3	None
256 × 192	Yes	8	1	None
128 × 64	No	B&W	1	None

Atari
520STApple
IICTandy
1000TRS-80
Color Computer

non-Apple peripherals, such as modems. Since it has a serial printer port, you'll need a serial-to-parallel converter to connect a parallel printer.

Overall. Well-designed, easy to use, and portable, the IIC can be found at attractively priced deals, especially when packaged with the IIC monitor. While the IIC has all the advantages of the IIe (except expandability), it also has all the drawbacks of its old technology: It's comparatively slow, and has limited disk-storage space and memory. Nonetheless, the IIC's ease of use makes it good for people who want "no fuss, no muss" computing. And Apple's new products for the IIC give a once closed system greater versatility for home use.

MACINTOSH

Strengths. The Macintosh, which comes in 128K and 512K ("Fat Mac") versions, is a compact computer with a sophisticated operating system. The computer, high-resolution black-and-white monitor, and disk drive (3.5-inch) are contained in one unit; the keyboard is separate. Each Macintosh comes with a mouse instead of cursor-control keys. You control the cursor's movement on the screen and give most other commands to the computer by moving the mouse over a flat surface and pressing its button. *MacWrite*, a word processor, and *MacPaint*, a fun-to-use and powerful graphics program, come packaged with the Macintosh. Most of the programs written for the Mac use "pull-down" menus, icons, and "windows." This common operating method, combined with the standard "point-and-click" approach of the mouse, makes learning programs easier than on other systems. The range of sound output (four voices) is impressive, and the graphics are sharp.

Weaknesses. The Macintosh is black-and-white only. This was not a liability until the Atari 520ST and Commodore Amiga, both with hi-res color, were introduced. Despite its fast microprocessor, the 128K Macintosh can be slow and annoying to use with only one disk drive. Constant disk-swapping is less of a problem with the 512K "Fat Mac" or with an external drive—and the long-awaited Hard Disk 20 from Apple (about \$2,000) should alleviate the disk-switching problem altogether. Since the keyboard has no cursor keys and only one function key, editing spreadsheets or text documents with the mouse can be slow. As with the IIC, the nonstandard serial ports force the user to buy Apple peripherals, or go to extra expense for special cables.

Overall. The Mac is an advanced and remarkably easy-to-use machine that has changed the way many users and software designers think about computers. The hi-res display is easy on the eyes and capable of detailed graphics—excellent for drawing and typesetting applications. Using a mouse instead of the keyboard can be an advantage. With the new Hard Disk 20 and Apple's *Switcher* (\$20)—a program that allows you to switch between several programs

in the computer's memory—the Macintosh is finally a true personal computer workstation.

ATARI CORP.

Last July, about one year after Jack Tramiel and other investors bought the "new" Atari Corp. from Warner Communications Inc., the long-awaited Atari 520ST started appearing in computer stores. It was the first visible manifestation since Tramiel's buyout of his long-espoused "power-without-the-price" philosophy. (See "Atari 520ST: A Macintosh for the Millions?" in the October issue of *FAMILY COMPUTING*.) Not to be forgotten, the new Atari 130XE (see "Some Call It Old Faithful" in the August issue), which arrived earlier in the year, is a welcome upgrade of the popular 800XL.

Now that Atari's actually delivered the 520ST, its other promises have to be taken seriously. For instance, Atari has said it will market a 10-megabyte hard-disk drive for about \$500, which is half the going price these days. And it has said it will market a compact disk drive for the new computer compact disks, also for about \$500. Right now, such drives are scarce and cost around \$2,000. But, before these dreams become reality, the company has got to show that the ST is a reliable machine.

130XE

Strengths. The 130XE is yet another incarnation of the venerable 800 line, which was introduced in 1979. It has four-voice sound and the same video chip that's responsible for Atari's unique graphics, and it runs a lot of software. Atari Home Computers have always been highly reliable, and great for general home use.

The 130XE has 128K and, with the appropriate software, will allow you to keep longer files in memory. The keyboard has four handy function keys—HELP, START, SELECT, and OPTION. Much software uses these keys to the user's advantage.

Weaknesses. While the Atari 130XE still offers sound and graphics features not found elsewhere (such as the Apple II line), it is an old computer design. Thus, it doesn't match the performance of the newer computers from Atari and other manufacturers, and it only displays 40 characters per line. While it has 128K available, virtually no new software takes advantage of this extra memory. Because developers have trained their sights on the new high-powered computers coming on the market, new software for the 130XE is likely to be limited.

Overall. Few computers offer the reliability, graphics, and sound features of the Atari XE line. The 130XE offers all the features of the time-tested 800XL, plus 128K of memory and a slicker keyboard. Amateur and professional programmers alike love their Ataris, and wouldn't trade them for all the Apples in Silicon Valley. For the price it's selling at now, you almost can't go wrong. But it's not a computer that will give you the longest growth paths.



Apple
Macintosh

Commodore
Amiga

Commodore
128

ATARI 520ST

Strengths. The 520ST is powerful and inexpensive, as promised. With its 512K, high-resolution screen display, and mouse-operating environment, it's hard not to compare the ST with the black-and-white Macintosh. However, the ST is also capable of displaying up to 512 colors on an RGB monitor, making it potentially more versatile. The ST comes ready for action, with a serial port (for a modem), a parallel port (for a printer), MIDI (Musical Interface Device) in and out ports (for connecting synthesizers and electronic instruments), and a connection for a monochrome or RGB monitor. It also has two joystick/mouse ports, and a port to connect a hard disk drive, which makes it the first computer with such a port built in. The keyboard has 10 function keys, and cursor keys, which can be used in place of the mouse if desired. The GEM (Graphics Environment Manager) desktop environment, which comes on a disk and allows programs to run with pull-down menus and windows, makes the ST easy to use and new programs relatively easy to learn. The DR Logo programming language, which comes on disk with purchase (another first in the industry!), takes full advantage of the GEM environment.

Weaknesses. Right now, there is little 520ST software on the market, though many developers have programs in progress. The inclusion of Logo rather than BASIC with the machine seriously limits the kinds of programs that you can write yourself (or type in from a magazine). And, while Atari says that 90 percent of all software written for the computer will work with both monochrome and color monitors, some developers say that software written to work with one monitor will not look very good on the other. All computers have their Achilles' heels—this could be the Atari's. Another drawback is the size of the system; it sprawls across a desk.

Overall. You get a lot for your money with the ST. However, the ST is beautiful, but impractical. The taming of a computer can be measured by the amount of good, useful software that takes advantage of the system's power. Right now, all we can do is wait.

COMMODORE BUSINESS MACHINES

Commodore is looking for a product that will replace the successful Commodore 64, once the best-selling micro-computer in the world. Last year, it tried the Plus/4 and Commodore 16, which didn't fill the 64's shoes and have been pretty much discontinued. Earlier this year, it brought out the Commodore 128, an upgraded C 64 that also runs some CP/M software. And, recently, it introduced the Amiga, which is cut from a different cloth altogether (see review in this issue). These two new computers, along with a new management team headed by President Thomas Rattigan (an ex-Pepsi executive), give Commodore a shot at recapturing the momentum it had in the

early 1980s.

The company still considers itself the "king of mass-merchandisers," committed to selling powerful computers at affordable prices. However, it's trying to build up a new dealer network of computer specialty stores to carry the high-powered Amiga.

Meanwhile, at presstime, Commodore 128s were scarce in the stores, and the new disk drive was missing entirely.

COMMODORE 64

Strengths. Though sales are finally slowing, the C 64 has been a dynamic best-seller for two years. The selection and availability of software for the C 64 are the best of any computer in its price range. Cartridge software, particularly easy for youngsters to use, is readily available. For music lovers, the three-voice synthesizer chip (SID) is a big plus. Piano-style keyboards and clever music-composition software take full advantage of the chip. A wide array of low-cost and reliable peripherals are available, from modems to touch tablets to speech synthesizers. Because of the large number of owners, support from magazines, users' groups, and Commodore is easy to come by.

Weaknesses. You must resort to PEEKS and POKES or buy additional software in order to take advantage of some features. The 1541 disk drive is very slow, although a variety of "fast-load" devices improve drive speed considerably. Also, unlike most systems, the drive is not capable of "self-booting" software. You must type a LOAD command to begin a program. Reliability has been a problem with the C 64 from the start, with an unusually high failure rate out-of-the-box. The ports are nonstandard, so you need special cables to connect non-Commodore peripherals. And the screen display is only 40 characters wide.

Overall. The C 64 is a good computer, but it can be difficult to use. It's adequate for home use (in fact, in many ways it's a classic "home computer"), especially if you use commercial software. Youngsters can have a lot of fun with the C 64. Because of its music synthesizer, anyone with a passing interest in music should consider it closely. But because of its unreliability and slow disk drive, it's not recommended for business use.

COMMODORE 128

Strengths. The C 128 is a Commodore 64 and a whole lot more (see "It's A C 64 and More . . ." in the July issue). An expanded keyboard with a numeric keypad is the most obvious improvement. But changes under the hood are even more striking. The C 128 operates in three different modes. In C 64 mode, it uses all C 64 hardware (it has the same expansion ports) and software. That means you don't suffer the initial software shortage usually associated with new computers. And, if you're upgrading from a C 64, you can still use the 1541 disk drive, as well as any printers and modems you own.

In the C 128 mode, you have access to 128K of RAM, a

brand-new BASIC 7.0 with more than 140 commands—including full support for all the graphic and sound capabilities of the machine—and a 40- or 80-column display (with Commodore's RGB monitor). There's also a built-in sprite editor (to create sprites) and a machine-language monitor, which can be a great help when programming in the Commodore's machine language.

The third mode, which requires the new 1571 disk drive, is CP/M 3.0. This granddaddy of operating systems gives you access to thousands of programs (many public domain), and business-quality software (e.g., *Wordstar* and the *Perfect* series). The 1571 drive is double-sided, and disks can hold up to 410K of data. It can transfer data much faster than the 1541.

Weaknesses. As with the Atari 130XE, there's little commercial software that takes advantage of the extra memory in C 128 mode. (Users who write their own programs, of course, will have a field day.) While the disk drive is an improvement over the 1541, it wasn't available in stores at presstime; because it's required to run CP/M, this means that the option and all the business software it includes is a "promise." Besides the new disk drive, you need Commodore's RGB monitor to take full advantage of the C 128, and that, too, is in short supply.

Overall. The C 128 is the computer Commodore should have come out with last year, instead of the ill-fated Plus/4. In fact, it's the first time that Commodore has introduced a new computer that's completely compatible with an existing one.

However, in the last year, a lot of new computers may have preempted the 128's place in the market. A full Commodore 128 system—with 1902 RGB monitor and 1571 disk drive—costs about \$900. At that price, the C 128 probably makes sense primarily for Commodore 64 owners who have existing software and peripherals to use.

IBM

The giant of the computer industry (and one of the most profitable companies in the world) is as strong in the business market (especially among Fortune 500 buyers) as Apple is in the schools. And, despite its flirtation with the general consumer market, the business-oriented IBM PC line is still IBM's only real success in microcomputers (see *reviews of the IBM PC and compatible computers in "Buyer's Guide to Business Systems" in October*).

In any case, IBM's expected to keep the PC/XT/AT line going, and to rethink the consumer market. Look for prices on the IBM PC to keep dropping, as IBM swings into gear with its high-powered PC AT, and keep the other eye peeled for a rumored new lower-priced computer for consumers. IBM has reportedly been testing such a computer in Japan, though the results are said to be not worth writing home about.

TANDY CORP./RADIO SHACK

Tandy/Radio Shack has been in the microcomputer market as long as anyone. The TRS-80 Model I was introduced in 1977, and for a while was the country's best-selling computer. It was followed by TRS-80 Models II/III/4/12/16, 100, and 200 (the briefcase-size lap-tops), and 6000 and the Color Computers 1 and 2.

In addition to the TRS-80 line, the company has a newer line under the "Tandy" name. The Tandy line, which is meant to shed Radio Shack's "techy" image and replace it with a more consumer-oriented one, includes the Tandy 1000, 1200HD, and 2000. And now, for the first time, Tandy Computer Centers stock third-party software.

Of all these Tandy/Radio Shack computers, the two most viable for general-purpose home use are the low-cost Color Computer and the spritely Tandy 1000. The Model 4, while reasonably priced for medium-level business ap-

plications, has poor sound and no color.

In most respects, Tandy differs from other computer manufacturers. It's not flashy, flamboyant, or prone to hype; it's somewhat staid and conservative—an IBM for the masses. It's not a price-cutter with screaming deals, and has no hi-tech wunderkinds who attract a lot of press. Tandy computers are decent products at decent prices, backed up by a massive nationwide dealer network.

COLOR COMPUTER 2

Strengths. Over the years, the "CoCo" has developed a solid following among home users. In the early days it was a hobbyist's machine, and that's resulted in a good selection of software and add-ons, such as a mouse and graphics tablet. Most are available through Radio Shack stores, and others through third-party mail-order vendors. Although the CoCo comes in a lower-priced 16K RAM configuration, you can do more with the 64K Extended BASIC version. Current owners cite the sophisticated OS-9 operating system (optional) and the 6809 CPU chip as programmer's delights. The CoCo is designed to be used with a television, obviating the need for a monitor.

Weaknesses. Like a number of systems in this guide, the CoCo is graying around the edges. For about the same price, you can get other systems that offer more versatility and features. The limited uppercase-only, 32-character-by-16-line display is a handicap if you're planning any serious application, especially word processing. While it can be upgraded, it's an inconvenient nuisance in this day and age.


Overall. In its time, the CoCo was a strong contender. For those who own one, it's still a viable, well-supported computer. But it's 1985, and potential buyers should look carefully at the competition. Even Tandy is reportedly working on new upgraded versions of its venerable old CoCo, which may be ready early in 1986.

TANDY 1000

Strengths. Tandy claims the 1000 is the computer the IBM PCjr "should have been." It runs all IBM PC software, except for a handful of titles. Important business products such as *Lotus 1-2-3* and the *pfs* series will run on the 1000. Like the PCjr, the 1000 has good color and sound capabilities, and some educational software has been written to take advantage of it. Features optional on the IBM PC that are standard on the 1000 include a parallel printer port, two joystick ports, color capability, and MS-DOS (disk operating system). The keyboard has 12 function keys and a numeric keypad. Tandy also sells an RGB monitor at a reasonable price (\$429).

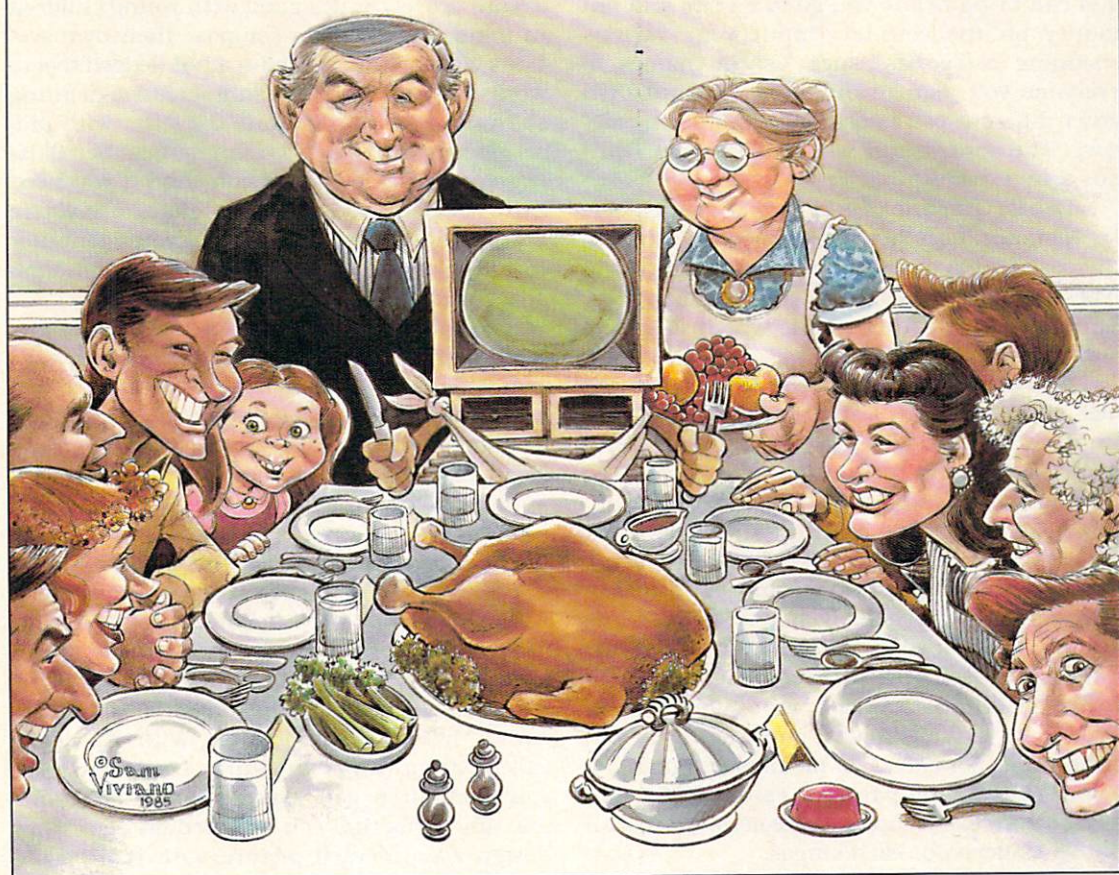
An integrated software package called *DeskMate* comes with the Tandy 1000. It includes spreadsheet, text-editing, data base, and communications programs, and a calendar and calculator. While it's not as powerful as integrated software of the *Framework* or *Symphony* variety, for some users *DeskMate* may be all that's needed to make good use of the 1000.

Weaknesses. The Tandy 1000 has only three expansion slots (compared with five in the IBM PC), and the system case is smaller than that of the IBM PC, so that it cannot accept all the same circuit boards. Thus, rather than having a world of third-party expansion products to choose from, you're often limited to Tandy expansion cards. Fortunately, Tandy has a number in the stores

Overall. The Tandy 1000 is well-designed and backed by a stable company, and may be a good choice for budget-conscious business buyers looking for IBM compatibility. With its good color and sound, the 1000 also qualifies as a good computer if you've got kids in the house. The free *DeskMate* software is adequate for general use, but is not a replacement for full-featured programs. 

Holiday Helper

SIT BACK
AND RELAX
WHILE YOUR
COMPUTER
PLANS
THE MENU,
DECKS
THE HALLS,
AND SPREADS
GOOD CHEER



BY
**MARLENE ANNE
BUMGARNER**

The approaching holidays signal a whirl of festivities and the chance to spend precious moments with your family. It's a time for entertaining, sending Christmas cards, exchanging gifts, and keeping the kids happily occupied. One of the best resources to help you face the holidays (so you have time left over to enjoy them) is your computer.

Combined with the right software, it can plan a party, handle lists, turn out the yearly letter to your relatives and friends, even keep the younger set busy working on fun, creative (and perhaps useful) holiday projects. Further, with a little ingenuity, the computer as "holiday helper" can contribute to decorating your house, provide new ways of making gifts, and ease menu-planning. Here's how:

GETTING ORGANIZED

Thanksgiving is arriving fast, and the winter holidays are just around the corner. Because drawing up mailing lists, planning for parties, and arranging for houseguests often precede the actual holidays by several weeks, now is the time to boot up a word processor, spreadsheet, or data base and enlist your com-

puter to help. Integrated programs or ones designed to work together, can be particularly useful since they allow you to switch easily among different programs you are using concurrently.

List making. Instead of getting inundated by little slips of paper or searching for last year's Christmas cards to update your address book, put your lists of party guests, gifts to buy, cards to send, or chores to do on a word processor or data base. On a word processor: Input your list and then use the CUT and PASTE functions to alphabetize or arrange your entries into categories. On a data base: Enter each name and address in a separate file, then use the SORT function to alphabetize or categorize (for example, by zip code). By saving your lists to disk, you can change and update them whenever you wish and print out fresh copies if you have a printer. The kids, too, can input their lists of what they want for Christmas, or who they want to get gifts for.

Rachel and Mike Finley of Milwaukee, Wisconsin, for example, compile their address list of family and friends on a word processor. As address changes occur, they maintain and up-

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date their list so it's complete when they're ready to send out greetings next year.

Budgeting. The holidays usually are expensive, especially if you're planning on throwing parties or putting up houseguests. Budgeting to avoid a bleak January can actually be fun on a computer. A spreadsheet program will allow you to see the different results your dollars can bring before you go to a store and put money on the counter. Input your various spending categories, such as the names of everyone you plan to buy gifts for, and then enter different price possibilities for each category. The spreadsheet will calculate your various total expenditures.

Deb Di Gregorio of Ridgewood, New Jersey, for instance, uses her spreadsheet to compare the cost effects of using different caterers and types of wines when throwing large parties. She finds it helps her decide which to use to stay within her budget.

Developing schedules. As the calendar fills with year-end festivities, arranging for transportation and keeping track of all the necessary details can turn into a nightmare. Why not put each person's schedule on your word processor, update it as necessary, and print out copies for everyone? By the same token, use it to draw up rehearsal and performance calendars for any holiday theater or caroling groups you're involved with. For plays, the word processor can also come in handy if you're planning to adapt an original script. Type it in, make changes, and then print out clean copies for each cast member. Similarly, if you're rearranging parts for carolers, use music software to edit up to four voices, then print out songsheets for each singer.

Some suggested software: *Bank Street Music Writer* by Mindscape for 48K Atari, C 64, \$50; *Better Working* series by Spinnaker for 48K-64K Apple, C 64, \$50-\$60; *Elite*Calc* by Elite for 16K TRS-80 CoCo, \$80; *I Know It's Here Somewhere* by Hayden Software for Macintosh, \$59; and *Team-Mate* by Tri Micro for C 64, \$49.

SITTING DOWN TO WRITE

Once you've completed your Christmas card and guest lists (or gotten them well underway), the next step is to buckle down and get your missives into the mail.

Creating cards and invitations. Adding the personal touch to your season's greetings can be turned into a family activity using printing software. Develop one design and print it out in quantity, or personalize each card, either by creating individual designs, or by incorporating the receiver's name in the pattern. Use the preset pictures and shapes included, or dream up your own illustrations using the freehand drawing facilities provided in many programs.

The Ritchey family of Fullerton, California, for example, use *The Print Shop* to make one-of-a-kind Christmas cards. John, 14, designs

the cards, and then each one is personalized before it's printed out. The Ritcheys use colored ribbons and paper to make each card unique.

Composing the seasonal family letter. If your family prefers the tradition of a photocopied yearly letter, you'll find the computer can involve everyone in the writing. With a word processor designed with young children in mind, the kids can compose their own sections while adults still have a full-fledged tool to work with. If you're using creative-printing software, you can illustrate the letter with preset shapes, or have each family member illustrate and print out a version. And if you need extra sheets to add a personal note, or if you're sending business greetings, use your computer to create a customized letterhead—and then adapt it for year-round use!

Lois Gelzer, who lives on Martha's Vineyard, just off the coast of Massachusetts, says that making individualized Christmas letters is one of the most efficient ways in which she's used her computer. "Most of what I want to say I can say to everyone; however, some things apply only to our family," she says. "Before I had a word processor, writing Christmas letters was much more time-consuming."

Sending hi-tech messages. The spirit of the season lends itself to communicating with loved ones in many ways. The computer can act as a new medium as well as a tool, by carrying messages on its screen or communicating them over phone lines. With a package called *Many Ways to Say I Love You*, very young children can make colorful, electronic greeting cards that can be saved on disk. They design an animated picture with colored on-screen stickers, and then add in music and written messages. It's then placed in an on-screen graphic-display envelope to be "unsealed" by the person they're "sending" it to at the touch of a key.

If you and several friends or relatives have modems, you can relay electronic greeting cards or invitations right over the phone lines. The Finleys, for example, send greetings and announcements to a whole community of far-away friends by e-mail. If you want to send a picture card instead of words, you can even do that using *VIDTEX*—either via CompuServe, or directly through the phone lines, to another computer equipped with the same program.

Some suggested software: *Bank Street Writer* by Broderbund for 64K Apple, 48K Atari, C 64, IBM PC/PCjr, \$50-\$80; *MacPublisher* by Boston Software for 128K Mac, \$100; *The Magic Slate* by Sunburst for 48K-128K Apple, \$69; *Many Ways To Say I Love You* by CBS Software for 48K Apple, C 64, \$30; *The Newsroom* by Springboard for 64K Apple, \$50; *The Print Shop* by Broderbund for 48K Apple, 48K Atari, C 64, 128K IBM PC/PCjr, 128K Mac, \$44-\$80; and *VIDTEX* by CompuServe for 48K Apple, C 64, 128K IBM, TRS-80 Model III & CoCo, \$40-\$60.

FROM THE DESK OF...
FAYE DONSELMAR

Stationery/Simon Says

T-shirt/Prince

DECORATING

Adding a touch of red and green on the doors, or a festive centerpiece on the table, can give the kids an incentive to show off their computer know-how.

Hanging banners, signs, and Christmas tree decorations. Turn your computer into a printing press for making wall hangings and other decorations. Using special banner-making software or graphic programs that print out lettering, your children can create large vertical or horizontal signs proclaiming the season's greetings and little decorations to hang on the tree. Jazz them up with colored ribbons or fanfold paper (or both), or color in the letters after printing out the banners.

Beautifying your table. Whether you're planning a small family get-together or a large "do," having a homemade centerpiece on the table and place-cards or personalized placemats at each plate can add a special flavor. Use drawing and printing software to create colorful creations freehand. Depending on the software, its library of shapes may contain "tools" for drawing rectangles and circles. It may also include symbols for plates, cups, and flatware, and renditions of turkeys, fruits, and vegetables. Glue, felt pens, and scissors can help complete the masterpiece.

Some suggested software: *Dazzle Draw* by Broderbund for 128K Apple, \$60; *Fontrix* by Data Transforms for 48K Apple, 256K IBM PC/PCjr, \$95-\$155 (\$25 for additional data disks); *Designer's Pencil* by Activision for 48K Apple, 48K Atari, C 64, 128K IBM PC/PCjr, \$25-\$40; *The Print Shop* (see above); and *ZBANNER+* and *ZCARD* by ZAZDA for 64K IBM PC/PCjr, \$50 each.

GIFT-GIVING

The nicest gifts contain something of the giver. There is software that especially lends itself to the creative spirit of the very young, the very old . . . and all ages in between.

Giving stories or plays as treasured mementos. Creative writing in various forms can make excellent gifts. Younger children can use software that asks them simple questions and then develops their answers into imaginative stories. Older children can use a general word processor or software that, apart from text-handling, has libraries of pictures to choose from and graphics tools for drawing original illustrations.

Erin Panntaja, 10, of Morgan Hill, California, for example, first researched the activities of the pilgrims at Plymouth Rock. Then, with several classmates, she wrote a Thanksgiving play on her family's word processor.

Making practical gifts. If a useful gift is more your style, make T-shirts with *Prince*, a new program that enables you to print out graphics and lettering on cloth and other materials. Or use *Patchworks*, also new, to design whimsical, kaleidoscope-like patterns you can print out in color for cards or wrapping paper.

You can also use *Patchworks* to create patterns for quilt-making or embroidery work.

Some suggested software: *Build A Book About You* by Scarborough for 48K Apple, C 64, 64K IBM PC/PCjr, \$40; *Kid Pro Quo* by Softsync for C 64, \$29; *Patchworks* by Random House for Apple, \$60; *Prince* by Baudville for 48K Apple, \$70; and *Story Maker: A Fact and Fiction Tool Kit* by Scholastic for 48K Apple, \$39.


ENTERTAINING

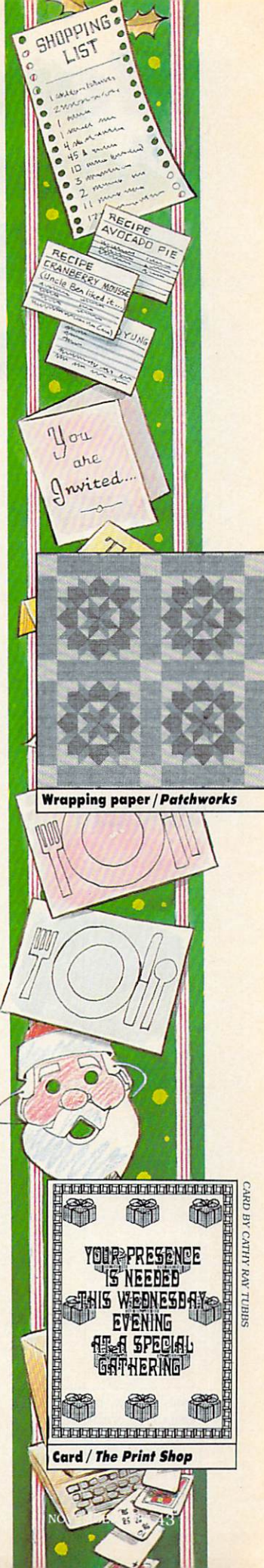
As your home fills with the bustle of guests, children's merriment, and the smell of festive cooking, making sure everyone's enjoying themselves (while getting everything done) becomes a feat in itself.

Keeping the children involved and happy. If the kids seem restless, boot up a printing program and challenge them to turn out a holiday newsletter. If the project goes well, it could be turned into a year-round gazette. Or, let them try movie-making with animation software. Another software package that's a natural when several children get together is *Mask Parade*. By selecting eyes, ears, noses, and hair from the menus, children can design their own masks and print them out. Felt pens, crayons, scissors, and contact paper are all that's needed to turn the kids into actors, squealing at each other's bizarre features.

Composing accompaniment or background music. Your computer can help keep carolers on key or provide interesting background music for entertaining. Bob Eltgroth of Morgan Hill, California, created a medley of holiday tunes using *Bank Street Music Writer* that provided an hour of background music for one of his holiday parties. He typed in the notes of several songs, and then, using an editor facility, adapted the meter and key until he liked the results. The Gelzers of Martha's Vineyard chose Handel's "Hallelujah Chorus," which they arranged in four parts on their Atari.

Planning menus and shopping lists. As your holiday grocery list stretches on for pages, your computer can be an invaluable help. Cooking software offers data bases filled with recipes and menu suggestions. You can enter your own recipes, and, in some cases, commentary (such as, "Uncle Ben likes this."). Since they are data bases, you can search for specific ingredients or food categories. If you plan all your meals at one time, some software allows you to print out a shopping list containing ingredients for all the dishes you've selected.

Some suggested software: *Bank Street Music Writer* (see above); *Chocolate Bytes* by The Software Toolworks for 128K IBM PC/PCjr, \$30; *The Diskette Cookbook Series* by Vanilla Software for 128K IBM PC/PCjr, \$40; *Mask Parade* by Springboard for 48K Apple, C 64, 64K IBM PC/PCjr, \$40; *Music Construction Set* by Electronic Arts for 48K Apple, 48K Atari, C 64, 128K IBM PC/PCjr, \$23-\$40; *VideoWorks* by Hayden for 128K Mac, \$100. 



CARD BY CATHY RAY THIBBS

Word Processors: New Tools for An Age-Old Task

BY ROBIN RASKIN



WHATEVER
YOUR
NEEDS,
THERE'S
A
PROGRAM
TO
MATCH

A word-processing program has a lot in common with a self-correcting electric typewriter and even that ol' No. 2 pencil. You can use any of these instruments to write letters to grandma, develop term papers, or type lengthy business reports. Word-processing software, however, will help you get the job done more efficiently.

A word processor is basically a program that lets you write and edit text which can be saved and printed out. Best of all, it allows you to make small changes in the text without rewriting the whole page.

Your family's work—whether an eighth-grade science report, a master's thesis or the company's annual report—will look more professional on word-processing software, without devoting hours of extra time.

Word-processing programs have come a long way since the first package was created in 1980. Today, they offer dozens of features. You can choose from word processors with pull-down windows, 12 different type fonts, a personalized "notepad," and 75 preconfigured printer formats. Sound like a dream? In reality, it could be a nightmare if you end up purchasing a program with lots of pizzazz and no power. On the other hand, you may not need a very powerful program. You probably wouldn't buy a Cadillac to drive to the grocery store a half-mile away. Similarly, you shouldn't spend \$300 on a super-deluxe word-processing program if your writing tasks don't extend beyond brief correspondence.

So what software *should* you buy? Before you can answer that, you'll need to ask yourself a few questions. Who will be using the program—you alone or other family members? What will the program be used for? To type term papers? Mailing lists? Long reports? How experienced are you on the computer? And how much are you willing to spend?

Now you're ready to narrow your selection and begin your research. Use our chart as starting ground. If you find a program that seems to suit your needs, take the research a

step further. Find a friend who has the program and borrow it for a few days. Or, at the very least, ask your local software dealer for a demonstration. For the most part, you'll find there are very few bad word-processing programs. And there are some that will strike a responsive chord, answering your personal style and needs.

CHARTING YOUR COURSE

The accompanying chart was designed as an easy reference to popular word-processing programs for both novices and sophisticated users. The packages were reviewed by regular contributors who looked at software for the computers they know best: Francis Amato on Commodore, Karla Fisk on Radio Shack, and Gwen Solomon on Apple computers. I reviewed software for the Atari, IBM, and Macintosh.

Quite a few of the programs we have listed are available for more than one machine; however, we've tried to include the version that best takes advantage of a particular machine's capabilities. Following is a brief summary of features we reviewed for each program—you should keep them in mind when you begin the search for your ideal word-processing program.

Method of Operation. Most word processors use menu- or command-driven systems. Many use a combination. Still another set uses icons, or graphic symbols. (For example, a filing cabinet might mean STORE or SAVE.) Menu-driven programs let the user choose an action from a list, or menu, of available functions. Command-driven programs are controlled by combinations of keystrokes. (In *Word Juggler*, for instance, you use CONTROL-S to move the cursor to the left edge of the screen or to the start of a line of text.)

Menus require little memorization, but tend to be slow. Commands require more memorization, but are usually accompanied by on-screen help. For a novice, menus are a godsend; a good word processor however (one that your family can grow with), will usually employ ways to speed up menu selection. *HomeWord*, for

ROBIN RASKIN, a FAMILY COMPUTING contributing editor, wrote this month's *Telecomputing* and *Home/Money Management* columns.

example, lets you turn off the icons, and you can bypass pop-up menus on *Perfect Writer*.

Regardless of how it operates, the word processor should be logically and mnemonically organized. For example, all print commands should be located within the same menu, and commands like CONTROL-P should represent a print, not a save command. Seldom-used commands should be "tucked away" so they don't distract from the writing process.

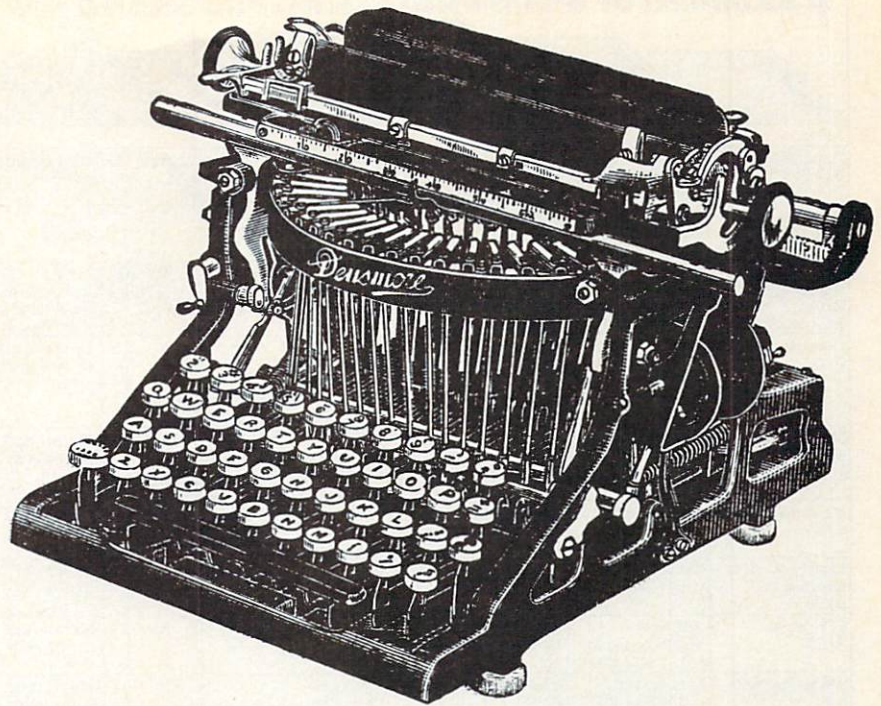
Display Capabilities. Otherwise known as "what you see is what you get." Most word processors let you enter print preview mode where you'll get a screen display representing the final printed page (with margins, page breaks, etc.). The most sophisticated programs give you a final representation on-screen while writing. They will format as you type (or when you issue a format command), displaying bold-face, underline, tabs, and sometimes even fonts and point sizes. For example, if I underline a word, it appears that way on my screen. If I alter margins, the document immediately reforms to the specified width.

If you're the editor of a newsletter, or run a word-processing business and deal with form letters and resumes, you'll want the best display capabilities you can get.

Text Entry/Editing: In the early days of word processing, all programs were mode-oriented. Either you were creating or editing text, and there were different sets of commands for each function. Most software today lets you write and edit simultaneously.

There are exceptions, however. For example, with *Bank Street Writer*, you can erase or enter text in the writing mode, but you must enter edit mode to do any find, insert or block move operations. Many educators believe this structure, which separates writing and editing tasks, is especially helpful for children just learning to write. On the other hand, adults generally view the task separation as a time-consuming obstacle.

Most programs today also feature "block operations," which means you can manipulate fairly large amounts of text by marking a specific section and indicating which operation (move, copy, or delete) you want completed. Some software, like *Bank Street Writer*, have line limits for block functions. Powerful programs have no limits. In addition, more advanced software has extensive "local editing"



THE TERMINOLOGY

Chain Printing: Gives you the ability to command your computer to print several files (stored on disk or tape) in succession so they appear to be one large document when printed out.

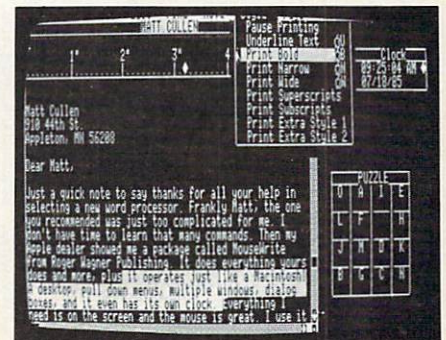
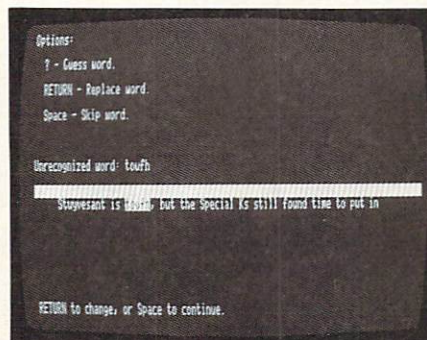
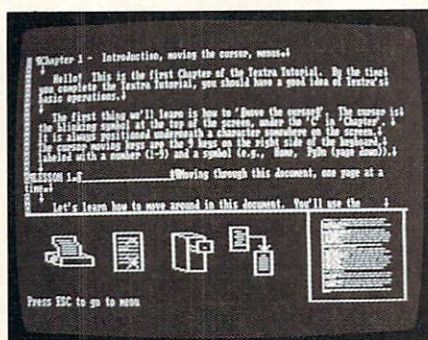
Horizontal Scrolling: Lets you view more characters than your word-processing program and monitor are set up to display. For example, if your text is 120 characters wide but the program is set up for 80-column display, move the cursor right, past the 80th column of your text. Additional characters will come into view while the characters on the left disappear into the left side of the screen.

Proportional Spacing: Produces professional-looking, typesetter-quality printouts. Rather than allotting the same amount of space for each letter, proportional spacing prints an "m" wider than a "k," and a "k" wider than an "l."

Search and Replace: Finds a specific word or phrase, and (at the option of the user) replaces it with another. This feature is useful for correcting spelling errors or for replacing abbreviations with full terms. The SEARCH function alone is useful for finding a specific section in a long document.

Split Screen (aka Windows): Divides screen so you can view at least two different portions of one document or different files at the same time.

Some popular word-processing programs and their features: Textra's disk-based tutorial, Word Juggler's spelling checker, and MouseWrite's pull-down windows.



A SAMPLER OF WORD-PROCESSING PROGRAMS FOR THE NOVICE AND THE PRO

Name/Price	Manufacturer	Hardware Req.	Multiple Columns Display/80 col.	Horizontal Scrolling	Split-screen	Overview Method of operation	Block Editing	Local Editing	Search/Replace	Default Mode	Cut/Paste	Base of Use	Cursor Movement
APPLE													
Apple Writer II/ \$149	Apple Computer, Inc. (408) 966-1010	64K Apple IIe, IIc	N	Y (40-col. optional)	Y	Y	G	Command-driven	Y (1,024-char. limit)	Word, paragraph	Y (global)	Insert	Y G E E
Bank Street Writer/\$70	Broderbund Software (415) 479-1170	64K Apple	Y	Y (40-col. optional)	N	N	G	Menu-driven	Y (15-line limit)	Word, line, paragraph	Y	Insert	Y E G G
Better Working: Word Processor/\$60	Spinnaker Software Corp. (617) 494-1200	48K Apple	Y	Y (40-col. optional)	N	N	G	Menu-driven and imbedded commands	Y (255-char. limit)	Character only	Y (global)	Insert	Y A G G
Homeword/\$70	Sierra On-Line (209) 683-6858	64K Apple	Y	N (70-col. in preview mode only)	N	N	G	Command-driven and icons	Y	Word, line	Y (global)	Insert	Y G E E
Magic Slate/\$90	Sunburst Communications (800) 431-6616	48K Apple; 128K for 80-columns	N	Y (20-, 40- and 80-col. versions)	Y	Y (in 80-col. mode)	E	Menu- and command-driven	Y	Word, sentence, paragraph	Y	Overstrike	Y E E E
MouseWrite/\$125	Roger Wagner Publishing Inc. (619) 562-3670	128K Apple IIe (enhanced), IIc	Y	Y	Y	Y	G	Menu- and command-driven	Y	Word	Y	Overstrike	Y E E G
Perfect Writer Version 2.0/\$139	THORN EMI (714) 261-6600	Apple 64K	N	Y	N	Y	G	Menu-driven	Y	Word, line, sentence, paragraph	Y (global)	Insert	Y G E G
PFS:Write/\$125	Software Publishing Co. (415) 962-8910	64K Apple IIe/IIc, 80-col. card	Y	Y	N	N	G	Menu- and command-driven	Y	Word, line	Y (global)	Overstrike	Y E E G
Word Juggler/\$99	Quark, Inc. (303) 934-2211	64K Apple IIe/IIc	N	Y (40-col. optional)	Y	N	G	Menu- and command-driven	Y	Word, line, paragraph	Y	Insert	Y G G G
The Write Choice/\$45	Roger Wagner Publishing Inc. (619) 562-3670	48K Apple	Y	Y (40-col. optional)	N	N	G	Command-driven	Y	Line	Y (global)	Overstrike	N N/A G G
ATARI													
Letter Perfect/\$100	LJK Enterprises (314) 962-1855	32K Atari	N	Y (40-col. optional)	N	N	A	Menu- and command-driven	Y (300-line limit)	Word, line, paragraph	Y (global)	Overstrike	Y G E E
PaperClip/\$60	Batteries Included (416) 881-9941	48K Atari 130XE	Y	N (40-col.)	Y	Y	E	Command-driven (partially menu-driven)	Y (25-line limit)	Word, line	Y (global)	Overstrike	Y G E E
Homeword/\$50	Sierra On-Line (209) 683-6858	48K Atari	Y	N (40-col.)	N	N	A	Command-driven and icons	Y	Word, line	Y (global)	Overstrike	Y G A E
Super-Text Professional/\$80	Muse Software (301) 659-7212	48K Atari 400/800/1200XL	Y	N (40-col.)	N (preview mode)	Y	A	Command-driven	Y	Word, line	Y (global)	Insert	Y A A E
COMMODORE													
Better Working: Word Processor/\$50	Spinnaker Software Corp. (617) 494-1200	C 64	Y	Y (40-col. optional)	Y	Y	A	Menu-driven	Y (255-char. limit)	Word, sentence, paragraph	Y (global)	Insert	Y G P A
Creative Writer/\$50	Creative Software (408) 745-1655	C 64	N	N (40-col.; 80-col. in preview mode only)	N	N	A	Menu- and command-driven	Y	Word, sentence, paragraph	N	Overstrike	N N/A A A
Fleet System 2/\$80	Professional Software, Inc. (800) 343-4074	C 64	Y	N (available in preview mode only)	Y	Y	A	Command-driven	Y	Word, sentence, paragraph	Y (global)	Overstrike	Y A P P
Word Processor Professional/\$50	Mirage Concepts (209) 227-8369	C 64	Y	Y (40-column optional)	N	N	A	Menu-driven	Y	Word, sentence, paragraph	Y (global)	Insert	N N/A E G
IBM													
Bank Street Writer/\$80	Broderbund Software (415) 479-1170	64K IBM PC/PCjr/XT	Y	Y	N	N	G	Menu-driven	Y (15-line limit)	Word, line	Y	Insert	Y G A G
Executive Writer/\$70	Paperback Software (415) 644-2116	128K IBM PC, 256K PCjr	N	Y	Y	N	G	Menu- and command-driven	Y	Word, line, sentence, paragraph	Y (global)	Overstrike or insert	Y E E E
Just Write/\$145	Multimate International (203) 522-2116	128K IBM PC, PCjr, PC XT w/DOS 2.0	Y	Y	Y	Y	G	Menu- and command-driven	Y	Word, line, sentence, paragraph	Y (global)	Overstrike	Y E G E
Perfect Writer/\$199	THORN EMI (714) 261-6600	128K IBM PC	Y	Y	Y	Y	E	Menu-driven	Y	Word, sentence, line, paragraph	Y (global)	Insert	Y G E E
Wordvision/\$50	Bruce & James Program Publishing, Inc. (415) 775-8400	96K IBM PC	N	Y	Y	N	G	Menu- and command-driven, and icons	Y	Word, sentence, line, paragraph	Y (global)	Insert (no overstrike)	Y A E E
Textra Vers.-3.1A/\$25 (\$15 for upgrade)	Ann Arbor Software (313) 769-9088	256K IBM PC/PCjr/AT/XT	Y	Y	Y	N	E	Menu- and command-driven	Y	Word	Y (global)	Insert	Y A E E
TANDY RADIO SHACK													
*Allwrite/\$200	Prosoft (213) 764-3131	TRS-80 Models I/III/4	Y	Y (64-col. on Models I/III)	Y	N		Menu- and command-driven	Y	Word, line, sentence, paragraph	Y	Overstrike	Y
Telewriter-64/\$50-\$60	Cognitac (619) 755-1258	TRS-80 CoCo	Y	Y (51, 64, 85)	N	N	A	Menu-driven	Y	Line, paragraph	Y (global)	Insert	Y N/A A A

KEY: E Excellent; G Good; A Average; P Poor; Y Yes; N No; N/A Not applicable.

File-Handling		Error-Handling	File Limit (Single-space pages)	Boldface/Underline	Headers/Footers	Preview	Chain Print	Prop. Spacing	Preset Printer Configs.	Tutorials	Index	On-screen Help	Overview	Recommended Audience	Comments
E	G	10 (expandable)	Both	Both	Y	Y	N	Y (2)	Y (manual)	Y	Y	E	For home, office, and pro writers	A sophisticated program that's easy to use. Has macro capability.	
E	E	5 (expandable)	Both	Headers only	N	Y	N	N	Y (disk)	Y	Y	A	For entire family, especially young children	Other packages are available to use with it (such as story generator). On screen calculator with 128K.	
G	G	10 (expandable)	Both	Both	Y	Y	Y	Y (12)	Y (manual)	Y	Y	G	For home or small business	Versatile and easy to use. Has spelling checker, word counter, and macros.	
G	G	6 (expandable)	Both	Both	Y	Y	N	Y (9)	Y (tape)	Y	Y	G	For entire family, especially young children (or novices)	User-friendly. Icons make the program especially easy for kids. As user becomes familiar with program, can use command-driven functions instead of icons.	
G	G	20 (expandable)	Both	Both	N (always in preview mode)	N	Y	N	Y (manual)	Y	Y	E	For entire family	Includes macros, and choice of various type styles. Comprehensive and easy to use with outstanding value and performance.	
E	G	18	Both	Both	N (always in preview mode)	N	Y	Y (8)	Y (manual)	Y	Y	G	For home	Can be used with key input alone, but key feature of program is use of the Apple mouse.	
G	A	25	Both	Both	Y	Y	N	Y (20)	Y (disk and manual)	Y	N	G	For serious writer or business use	Sophisticated word processor. Includes footnotes, spelling checker, thesaurus, index, and table of contents.	
G	G	4 (expandable)	Both	Both	N (always in preview mode)	Y	N	Y	Y (manual)	Y	Y	G	For school, home, and business	An excellent general-purpose word processor with word counter.	
G	G	8 (expandable)	Both	Both	Y	Y	N	Y (30)	Y (disk and manual)	Y	Y	G	For professional use	Includes footnotes and spelling checker. Telecommunications capabilities and macros. Works with PFS: File and Quickfile.	
G	A	8	Both	N	Y	Y	N	Y (8)	Y (manual)	Y	Y	G	For home and school	Easy to use. Includes high-res graphics, typing tutor, and footnotes feature.	
G	A	7.5	Both	Both	Y	Y	Y	Y (15)	Y (disk and manual)	Y	N	E	For home and school	Used in conjunction with <i>Data Perfect</i> and <i>Spell Perfect</i> . It's a powerful program. Also has a word counter.	
E	E	58 (expandable)	Both	Both	Y	Y	Semi-proportional	Y (25)	Y (manual)	N	Y	A	For college students, small business and home users	Recommended for anyone who wants to mail merge, incorporate graphics in documents, and use advanced printer-formatting. Has word counter, macros. Improved version for 130XE.	
G	E	3	Both	Both	Y	Y	N	Y (2)	Y (tape)	Y	N	E	For entire family	Icons especially good for the young or novices. A package you can grow with. Not fast, but it's fairly powerful.	
E	P	5	Both	Both	Y	Y	N	Y (7)	Y (manual)	N	Y	G	For the frequent word-processor user	A lot of commands, and a complex structure. Has a word counter, macros, and telecommunications capabilities.	
G	E	10	Both	Both	Y	Y	Y	Y (11)	Y (manual)	Y	Y	A	For grade-school on up	Power without complexity. Has a spelling checker, word counter, macros, and a scratch pad for making notes to yourself.	
A	A	1.5	Both	Both	Y	N	Y	Y (2)	Y (disk and manual)	Y	Y	G	Good for entire family	Simple to use and easy to understand. Doesn't require much effort to learn.	
A	A	4.5	Both	Both	Y	Y	N	Y (24)	Y (manual)	Y	Y	A	For intermediate and business users	Includes a spelling checker and word counter. Has macros but not very easy to use.	
A	G	4.5	Both	Both	N (always in preview mode)	Y	Y	Y (1)	Y (manual)	Y	N	G	For business, high school, or college students	Easy to use, but not easy to learn. Well-suited for merging data-base info into form letters. Has spelling checker.	
E	E	10	Both	Headers only	N	Y	N	N	Y (disk)	Y	Y	G	For entire family, especially young children	Packs power into simple menu format. Structured approach good for children just learning to write.	
E	E	90 (expandable)	Both	Both	Y	Y	N	Y (17), one default	Y (manual)	Y	Y	E	For novice to pro; student or business user	Ability to do footnotes, incorporate graphics, and link setup sheets to another document.	
E	E	199	Both	Both	N (always in preview mode)	N	N	Y (6)	Y (manual)	Y	Y	E	Home use only	A scaled-down version of <i>MultiMate</i> . Easy to learn and use. Good for casual home use.	
G	E	Expandable	Both	Both	Y	Y	Y	Y (38)	Y	Y	Y	E	For small-business user	Best for those interested in integrated approach.	
G	A	45 (expandable)	Both	Both	N	N	N	Y (8)	Y (disk and manual)	Y	Y	G	For beginners	Manual and program are very visual, with online help. Good for those taking their first plunge.	
E	G	30	Both	Both	Y	N	N	Y	Y (disk and manual)	Y	Y	E	For high-school or college students	A program you can grow with. Easy to use with well-designed menus. Powerful and fast.	
		10-15 (expandable)	Both	Both	Y	Y	Y	Y (220)	Y (manual)	Y	Y		For college students and business users	Powerful, comprehensive package. Has footnotes and indexing functions.	
A	A	4	Both	Both	Y	Y	Y	Y (3)	Y (disk and manual)	Y	N	A	For entire family	One of the best programs for the CoCo.	

*Not available for review.



**IF A WORD
PROCESSOR
DOESN'T FEEL
RIGHT FOR YOU,
NO LIST OF
FEATURES CAN
COMPENSATE.**

features that let you change more than one character at a time. For example, *Creative Writer* lets you edit by character, word, line, and sentence, using only a few keystrokes. Local editing is extremely helpful in polishing your text.

File Handling: A word-processing program's file-handling capabilities should be evaluated based on ease of use, as well as on the following: **1.** Can you initialize or format a new data disk from within the word-processing program? **2.** Can you check which files are stored on your data disk? **3.** Is it easy to rename and delete files? A good word processor will let you do all of these things, saving you much time and aggravation. Also, consider how the program handles potential errors. Are you prevented from accidentally wiping out an entire file if you try to save another file under the same name? Does the program keep you from quitting if the current document hasn't been saved?

The software's storage capacity is also crucial to the ease with which you can handle files. (In the chart, we've shown the program's file capacity in single-spaced pages.) If you're writing a book, thesis, or fairly lengthy term paper, large file capacity is important. With most word processors, you also have the option to "cut and paste." This allows you to break large documents into smaller ones and merge them. Some programs merge files on the display screen, while others do it during printing. Jumping back and forth can be a real nuisance if the word processor doesn't simplify the process. (See "Ease of Use" column in chart on previous page.)

Printer Functions: Page numbering, head-

ers/footers (descriptive titles that appear throughout a document), and boldface/underline features are offered in most recent programs. (There are a few exceptions noted in the chart.) Some software is more extensive than others. For example, *PaperClip* lets you specify the page you'd like to start numbering on. And *Super-Text Professional* has no line limit for headers and footers, while other programs allow only one line.

Be forewarned, though: Many of your printing features will depend on the capabilities of your printer as well as your word processor.

Documentation: Many of the better word-processing packages offer disk-based instruction and/or sample documents. Some include tutorials in the manuals. Still others, like *HomeWord*, have audio tapes. You'll find the medium of instruction far less important than the information actually provided. A manual should have an index, and should also be able to serve as an easy-to-access reference guide once you're done with the initial learning process.


SUPER FEATURES

Super features are attractive enticements, but few people will need or use every one. Footnotes, spelling checkers, indexes, and word counters most quickly come to mind. For a college student, these added attractions may be the answer to end-of-year term paper trauma. On the other hand, for a fiction writer, they may be nothing more than expensive frills.

Macros, too, are not for everyone. Macros are miniprograms, of a sort. They are used to implement commands that generally require several keystrokes. They can also be assigned for commonly used expressions. People who do a lot of business letter-writing often use macros. For office work, you might set up a macro for a particular form letter, or perhaps for the often-used salutation "Dear Sir." If you're using *Apple Writer II*, for example, you can set up macros so all you need to do is hit Open Apple and say, the "#" key, and DEAR SIR will appear on your screen. The occasional writer, however, will more than likely have a difficult time remembering the command to recall a macro.

There are some "super" features that are overrated. For example, "automatic save to disk" is billed as an "extra," but can actually be more of a hindrance. You might be typing away furiously (having just broken through writer's block) when suddenly your machine is preoccupied with saving your work.

THE MATCH GAME

As you've probably already discovered, finding the perfect word-processing program is not easy. It takes time, energy, and, undeniably, abundant effort. If the word processor doesn't feel right for you, no list of features can compensate. But, once you find the right program, you'll know it. 

AMIGA

A MACHINE FOR EVERYONE IN THE FAMILY

BY JOHN JAINSCHIGG

The Amiga system and software used for this evaluation were not final production versions. Commodore was kind enough to allow our extended evaluation of a preproduction Amiga and system software just prior to release.

The Commodore Amiga appeared on the personal computer scene this autumn with some of the same kind of fanfare that greeted the IBM PC and Macintosh. The Amiga's technical specifications (see "Amiga Facts") and relatively low start-up cost mark it as a breakthrough, though the purchase of a monitor, second disk drive, and memory expansion could boost the "bargain" entry-level price to about \$2,300. The Amiga's stunning graphics, sound, and voice synthesis features promise new and exciting programs for entertainment and education. A fast, powerful Motorola 68000 processor; three custom chips; vast memory and disk storage; an easy-to-learn, "mouse-and-window"-based operating system that allows you to run more than one program at a time (called "multitasking"); and optional IBM PC compatibility (promised by Commodore soon after the machine's release) could make the Amiga an ideal business machine. Time will tell how the Amiga's sophisticated technology translates into productivity and pleasure for its users.

THE SYSTEM UNIT

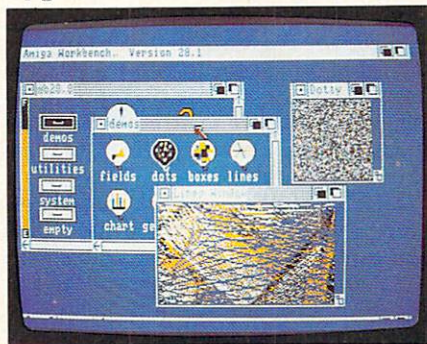
The Amiga system unit is about two-thirds the size of an IBM PC in all dimensions. The keyboard can be stored neatly underneath when not in use. Strongly constructed, the system unit can support up to 40 pounds—so you can put a monitor or television conveniently on top. Other peripherals, such as the 2400 baud modem and 20 megabyte hard disk from Tecmar, may also be stackable in this location.

The system unit contains a small fan, which is almost inaudible and will likely reduce heat-related maintenance problems. On the right and around the back lie an array of ports and connectors.



The Centronics port lets you plug in a variety of parallel printers. The serial port is programmable to work with printers, modems, and other peripherals, including a promised MIDI (Musical Instrument Digital Interface) unit permitting control of audio equipment and music synthesizers. Though there's no room in the case for extra circuit cards, a port in the side will accept add-ons, including a proposed eight-megabyte RAM expansion.

Internally, you can expand memory to 512K. Serious users will probably want to make this \$200 upgrade fairly soon, mostly because the 256K standard memory actually turns out to be more like 150K when the disk operating system is booted up. That's not a lot of memory for a system designed to run not one, but *many* programs at once. Even with the 256K upgrade installed, users may be



With its "multitasking" ability, the Amiga allows you to have many programs on-screen and running at one time.

AMIGA FACTS

SUGGESTED RETAIL PRICE: \$1,295.

MEMORY: 256K user RAM; 256K of protected RAM for operating system. In later models, the operating system will be contained in 192K of ROM. RAM is internally expandable to 512K, externally to eight megabytes.

VIDEO DISPLAY: RGB, composite color, or television.

GRAPHICS: Four resolutions: 640×400, 16 colors; 640×200, 16 colors; 320×200, 32 colors; special "hold-and-modify" mode, 4,096 colors. Colors in three main modes chosen freely from a palette of 4,096 colors. Custom animation and graphics chips provide fast line-drawing and area fill, and support eight sprites.

TEXT: Bit-mapped. Default display provides 60 or 80 characters per line.

Text may be resized; new fonts and styles may be loaded from disk or defined as needed by software. Text may be displayed in any graphics mode.

SOUND: Custom sound chip produces four channels of synthesized or digitized stereo sound. Permits speech synthesis under software control.

KEYBOARD: 89 keys, including 13-key numeric keypad, cursor-control diamond, 10 function keys, open- and closed-Amiga special function keys. Light on CAPS LOCK key.

INTERFACES: Two mouse/joystick ports; RAM expansion slot; bus extender; video (for composite monitor); television; combined analog and digital RGB; left and right stereo; programmable serial; external disk; and Centronics compatible parallel ports. Keyboard connector.

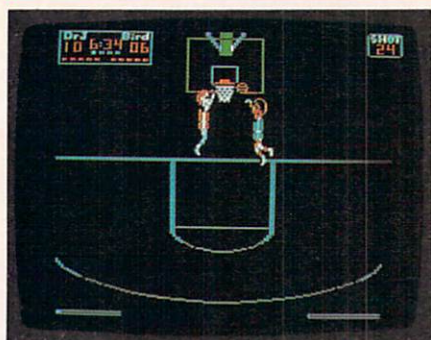
BUNDLED HARDWARE: System unit includes built-in 880K (formatted) 3½-inch microfloppy drive. Detachable keyboard. Two-button mouse.

BUNDLED SOFTWARE: Kickstart; Workbench; Amiga Extras (with Amiga BASIC and Amiga Tutor).

hard-pressed to run more than two or three major applications simultaneously.

THE KEYBOARD

The Amiga's 89-key detachable keyboard is graceful and light. Key travel is full and smooth, and the touch-typist feels comfortable almost immediately. The RETURN and SHIFT keys are amply sized and normally placed. The keyboard also sports 10 programmable function keys, a 13-key numeric keypad (lacking, unfortu-



Compared to the C 64 version (top), the Amiga version of *One on One* (Electronic Arts) has more detail, depth, and clarity. It also has realistic sneaker-squeaking and backboard-bouncing sounds!

nately, math symbols), and other amenities. Hopefully, software developers will exploit these keys as they have so successfully in other systems.

TURNING IT ON

When you turn on the Amiga, friendly tones and pictures prompt you to insert first the *Kickstart* disk, containing the operating system software, then the *Workbench* disk, containing AmigaDOS and the *Intuition* user interface. The entire procedure takes under a minute.

The *Workbench* portion of *Intuition* is externally similar to the Macintosh's *Finder* environment. It provides an easy-to-use "desktop" of icons, windows, and pull-down menus that can be operated with the mouse. *Workbench* lets you copy files and disks, run programs, and work quickly and easily with other functions of AmigaDOS.

For people who feel more comfortable entering DOS commands from the keyboard, a utility called CLI (Command Line Interface) permits this. Whichever way you choose to handle AmigaDOS, the system presents a new level of functionality in disk operating systems. The DOS lets you organize files on disk into different classes under a hierarchy of directories, making it easy to manage the large numbers of files a large-capacity Amiga disk can hold. The fil-

ing system should work equally well with the even larger volume hard disks soon to come.

WORKING WITH AMIGA

The Amiga is a true "multitasking" system. You should be able to run almost any group of programs together without any conflict. The effect of multitasking must be seen to be believed—its potential for improving productivity is immense. Imagine printing out a file from your word processor while simultaneously downloading another over the modem. Or backing up a disk through DOS while simultaneously running the programs it contains. Do you wish your word processor could edit two files at once? Ten files? No problem. Just load the processor several times into different windows, load a file into each, and you're running.

Though the software at our disposal was limited, we were able to play a little with the Amiga's multitasking capabilities. We were, for example, able to run several graphics demonstrations simultaneously, and, in another test, obtain directories from two disks at the same time through two CLI windows.

GRAPHICS AND SOUND

Workbench runs in a high-resolution, 640×400 pixel mode in four colors. Text, whether the user elects to display it at 60 or 80 columns, is clear and unwavering on the RGB display. It's also remarkably readable on a composite color monitor—particularly in the 60-column mode.

We were able to sample the Amiga's graphics and sound capabilities by running some utility and demonstration programs. One demo portrayed a group of multicolored planes that seemed to rotate in perspective. The effect was accomplished mainly by the special graphics hardware, which drew lines, filled areas of the screen with color, and then erased them, all at amazing speed. An impressive sound demo (written partially in BASIC) loaded digital data describing the sound of a drumbeat into RAM, then let us play the drums by tapping on the keyboard. Even through the monitor's tiny speaker, the effect was uncannily realistic.

Another BASIC sound demo employed the speech library functions accessible to all programs running on the Amiga. Text could be entered at the keyboard, then would be spoken back by the system in either a "male" or "female" voice. The Amiga's speech was as good as or better than any synthetic speech we've heard.

AMIGA SOFTWARE

Even the best machine won't do much without software, and while little was available when the Amiga was released, developers expect many products to be available by Christmas or early next year. In addition to the software listed here, many languages such as Logo and Pascal are also being developed. We have given prices where available, and consumers can write to the Director of Software at Commodore Business Machines, Inc., 1200 Wilson Drive, West Chester, PA 19380, for more information.

Aegis Development Corp., (213) 306-0735; *Amiga Draw*, \$150; *Amiga Draw Professional*, \$495. **Arktronics**, (313) 769-7253; *Textcraft*. **Batteries Included**, (416) 881-9941; *HomePak*, \$70; *Portfolio*, \$250. **Broderbund/Synapse**, (415) 479-1170; *The Print Shop*, Essex, *Brimstone*, *CalCraft*, *Mindwheel*. **Chang Labs**, (800) 972-8800; *Rags to Riches*, includes four integrated accounting packages (*Ledger*, *Receivables*, *Payables*, *Sales*), about \$225 each. **Cherry Lane Technologies**, (212) 824-7711; *Concert Craft*, \$79; *Texture*, \$249. **Electronic Arts**, (415) 572-ARTS; *Return to Atlantis*, *Marble Madness*, *Arcticfox*, *Deluxe Printing*, *Deluxe Graphics*, *Deluxe Video Construction Set*, *Deluxe Music Construction Set*, *Skyfox*, *Seven Cities of Gold*, *Archon*, *Julius Erving* and *Larry Bird Go One-On-One*, *Pinball Construction Set*, *Financial Cookbook*, prices from \$40–\$50. **Island Graphics**, (415) 332-5400; *PaintCraft*, *Business Graphics*, *Graphicraft*, *Animation*. **Mindscape, Inc.**, (312) 480-7667; *Keyboard Cadet*, \$40; *The Halley Project: A Mission In Our Solar System*, \$50; *Deja Vu: A Nightmare Come True*, \$60. **The Software Group**, (518) 877-8600; *Enable/Write*, *Enable/Office Manager*, *Enable/Calc*, *Enable/File*. **Tardis Software**, (408) 372-1722; *Maximillian*, integrated business software; includes *MaxiCalc*, *MaxiWord*, *MaxiGraph*, *MaxiTerm*, and *MaxiShare*, \$195.

CONCLUSION

By welding color graphics and sound to number-crunching power, and coating the bond with sophisticated and user-friendly features, the Amiga combines elements of and sets new performance standards for machines in the low, middle, and high ends of the market. Those who need a computer for only one application may well not make full use of the Amiga's versatility. Those with wide-ranging needs, creative professionals, for example, or those searching for a home system but unwilling to compromise on business power, should take a long look at the machine. Its ease of use may captivate the novice; kids may be turned on by its graphics and sound. With the proper software, Amiga may yet prove its "fitness for any particular purpose." ☐



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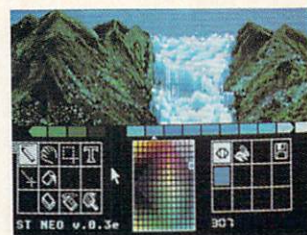
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Standard RAM	512K	256K	512K	256K
Number of Keys	95	95	59	89
Mouse	Yes	No	Yes	Yes
Screen Resolution (Non-Interlaced Mode)				
Color	640 x 200	640 x 200	None	640 x 200***
Monochrome	640 x 400	720 x 350**	512 x 342	640 x 200***
Color Output	Yes	Optional	None	Yes
Number of Colors	512	16	None	4096
Disk Drive	3.5"	5.25"	3.5"	3.5"
Built-in Hard Disk (DMA) Port	Yes	Yes	No	No
MIDI Interface	Yes	No	No	No
No. of Sound Voices	3	1	4	4

**With optional monochrome board (non bit-mapped)

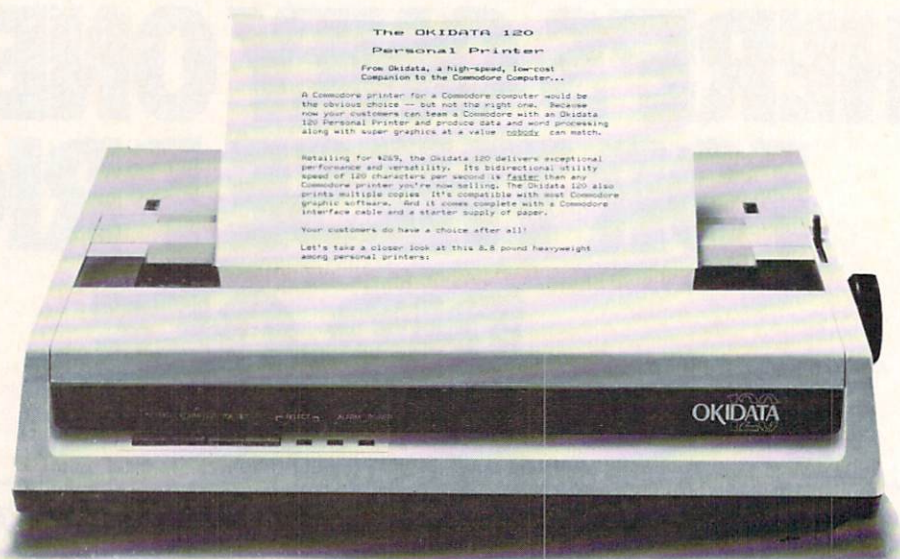
***Interface Mode - 640 x 400



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the Programmer



ILLUSTRATION BY BARTON STABLER

N O V E M B E R

TIPS TO THE TYPIST

Page 56

Helpful hints on how to type in programs, and what to do if a program doesn't work.

FUN/LEARNING PROGRAM

Page 57

Test your vocabulary against a friend's, and learn about computer logic, with Word Wars.

ARCADE GAME

Page 65

You'll need fast reflexes and nerves of steel to beat Get 'Em.

FEATURE PROGRAM

Page 70

Back by popular demand, our multifunction filebox program, Home Information Manager, is presented here for the Apple II series.

PROGRAMMING P.S. Page 65 Corrections to previous months' programs.

ILLUSTRATION BY JIM CHERRY III

Cherry

TIPS TO THE TYPIST

Typing in FAMILY COMPUTING'S programs is a great way to become familiar with your computer and get some free software "to boot." But it's frustrating to type in a long program only to find it doesn't work as it should. When this happens, simple typing errors are most often the cause. So to help you gain greatest value from the time you spend computing with us, we've put together some tips on how to avoid typing errors—and what to do if a program doesn't run right. Read them carefully and you'll be up and running in no time!

SOME GENERAL RULES

1. Do read instructions and program headings carefully. Make sure your computer has enough memory, the right version of BASIC, and the appropriate peripherals (joysticks, printers, disk drives, etc.) for a program.

2. Don't let fatigue and boredom contribute to inaccuracy. If you're new to programming, try typing in shorter programs first. Type in a longer program in easy stages, **SAVE**ing each installment as you go.

3. Until you are fairly familiar with BASIC, **do** assume that every word, number, letter, space, and punctuation mark in a program listing must be copied accurately if the program is to function as intended.

4. Do watch out for potential trouble spots. About 90 percent of all typing errors occur in **DATA** statements: long lines filled with numbers or incomprehensible secret codes. If possible, have someone else read **DATA** to you as you type, and help you proofread it if you have trouble later on. Proofreading from a printout is best.

5. Do be aware that program listings printed in FAMILY COMPUTING sometimes differ from what you will see on your computer's screen or in printouts you produce at home. Our program listings are printed 54 characters wide. Thus, a single BASIC program "line" (sometimes called a "logical line") may appear as several lines in our listing. If you are typing along and reach the right margin of the printed listing, don't press **RETURN** or **ENTER** until you've checked to see if the program "line" you're typing really ends there. The way to tell is to check if the line following begins with a multiple of 10 that follows in sequence from the previous logical line. **REM** statements are the exception and typing them in is optional.

Several computers (**ADAM**, Apple, Atari, and TI) format BASIC programs according to unique rules of their own. Don't let this throw you—just type in the listing exactly as printed in the magazine and your computer is guaranteed to accept it, even though it may end up looking a little different on your screen.

6. One foolproof way to correct an error in a BASIC program line is to type the line in again from the beginning, and press **RETURN** or **ENTER** to set it in place of the old one in your computer's memory.

WHICH PROGRAMS WILL RUN ON MY COMPUTER?

Unless a program heading indicates otherwise, programs

will run on any version of the computer specified, with the following exceptions:

- Apple programs run under Applesoft (not Integer) BASIC on the Apple II (with language card), II plus, IIe, and IIc.
- IBM compatibility of BASIC programs is determined by both the hardware and the version of BASIC used. Our programs for IBM PC & compatibles are composed on IBM PC & PCjr's, and tested under most versions of BASIC available for these machines. They are then tested on a variety of IBM-compatible machines under the versions of BASIC supplied with them. Each "IBM PC & compatibles" program listing is supplemented by a rundown of the machines and versions of BASIC under which the program is guaranteed to work. Most programs will probably run on many other PC Compatibles and under other versions of BASIC.
- TI programs not marked "w/TI Extended BASIC" should be run under standard (console) TI BASIC.

DEBUGGING HINTS

Sometimes even the most careful typist makes a mistake. Don't expect your program to run right off the bat. If you have problems, remain patient and follow these general instructions for a probable quick fix.

1. Write down any error messages you receive.

2. If necessary, look these up in your manual, and check the indicated lines for simple mistakes. Also check related lines (see No. 4, below), such as the **DATA** statements corresponding to a **READ** routine. Correct all the problems you can find, and **SAVE** a corrected copy of the program before typing **RUN** again. If you're lucky, all systems will be **GO**; if not . . .

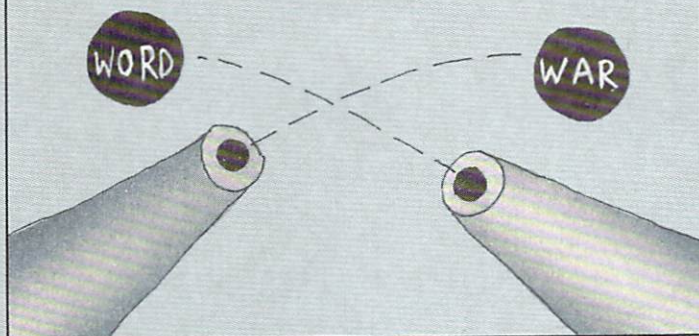
3. **LIST** the program in screen-size chunks (check your manual for instructions on how to **LIST** parts of a program). Even better, if you have a printer, get a printout. Compare what you've typed in—letter by letter—to the published program. Make sure that you haven't typed the numeral 0 (which is slashed in our listings) for the letter O (which isn't), swapped a small letter "l" for the numeral one, dropped or mixed up some punctuation, switched uppercase text for lowercase, or vice versa (particularly in **DATA** statements or within quotes), or miscounted the characters (and/or spaces) between a pair of quotes. Get someone to help you if possible.

4. Check your **DATA** statements—then check them again. Mistakes in **DATA** statements are the single most common cause of program failures. Bad data can cause a program to malfunction at any point, which can be misleading. If you can't find your error in the lines the computer specifies, check your **DATA** statements line by line, letter by letter, comma by comma. Then have someone else check it for you.

5. If all else fails, turn off your computer and relax. Then try again the next day—exhausted proofreaders are careless proofreaders.

WORD WARS

BY JOEY LATIMER



Pit yourself against a friend in a battle of words—play *Word Wars*! The object of the game is to type in a word with either a lower or higher value (the computer decides which) than the word the other player chooses. The computer, acting as judge and referee, also adds challenge to the game by deciding how many letters should be in each word and what the first letter should be. After you've each typed in a word of the right length, beginning with the proper letter, the computer figures out their values. Depending on whether the goal was to produce a lower- or a higher-valued word, one player wins the round. In the rare case that both players' words have equal value, the round is considered a tie.

The computer determines the value of each word by adding up the "ASCII" codes of each letter. ASCII (American Standard Code for Information Interchange) is the numeric code your computer uses internally to represent letters, numbers, and other characters. In ASCII, the capital letter "A" is represented by the number 65, "B" with 66, on up to "Z"—which is coded as 90. Lowercase letters, punctuation marks, etc., are represented by different ranges in the ASCII code, and minor details may vary from one type of computer to another. (Check your computer manual for an ASCII table.)

However, you don't have

to think in terms of ASCII codes to play *Word Wars*. All a player *really* has to remember is that an "A" counts for less than a "B," which counts for less than a "C," etc. Note also that *Word Wars* won't work reliably unless you enter words (and answer the computer's questions) in all capital letters and avoid using punctuation. Make sure the CAPS LOCK key (or equivalent) is down before you play!

To make the game fair, *Word Wars* will ask players to verify that the words they enter are actually in the dictionary. Players should agree to accept whatever dictionary they have on hand as an authority.

THE LOGIC OF WORD WARS

At the beginning of each round, the computer decides randomly if players should aim for lower- or higher-valued words. The statement that makes the decision looks something like this:

```
HL = (RND>=0.5)
```

This strange-looking statement is really a simple assignment statement (it assigns the value on the right to the variable on the left), just like $x = 1$. In other words, the expression inside the parentheses has an actual numeric value that is assigned to variable HL.

Such an expression, called "Boolean" after the 19th-century mathematician George Boole, is either true or false. In this case, the random number RND ei-

ther is greater than or equal to (\geq) 0.5 (and the expression is true) or it is not (and the expression is false). Other examples of Boolean expressions are $(X=Y)$ and $(A<2 \text{ OR } B>3)$.

How does BASIC represent the logical value (true or false) of a Boolean expression as a number? On many computers, the value -1 stands for "true" and 0 stands for "false." We say these computers have "negative logic." Others (e.g., ADAM, Apple II series, and Atari) use $+1$ to mean "true" and, again, 0 to mean "false." We say those computers have "positive logic." To find out which your computer has, just type in something like `PRINT (3=3)`—without a line number—at your BASIC prompt, and press RETURN or ENTER. It's certainly true that 3 equals 3 , so either 1 or -1 will be displayed on your screen.

The Boolean expression $(\text{RND} \geq 0.5)$ uses the RND function to generate a random decimal fraction between 0 and 1 , and compares it to 0.5 . If the random number is greater than or equal to 0.5 , the expression is true and variable HL is given the value -1 (or $+1$ on systems using positive logic). This makes the higher-valued word win the current round. If the random number is less than 0.5 , the expression is "false" and HL gets the value 0 , making the lower-valued word win.

At each round's conclusion, the values calculated for each player's word are compared by another Boolean expression:

```
CM = (L(2)>L(1))
```

Here, $L(1)$ is the value of the first player's word, and $L(2)$ the value of the second player's. The variable CM is

given the value -1 (or $+1$) if the second player's word has a higher value than the first player's. Otherwise, it's given the value 0 .

Using the values for HL and CM, we can create a table that anticipates all possible outcomes of a round. Each value is expressed in terms of negative logic (-1 = "true"). (See below.)

Note that when HL and CM differ, player 1 wins, whereas when HL and CM are the same, player 2 wins. A third Boolean expression makes use of this fact:

$1 - (\text{HL} = \text{CM})$ (on systems with negative logic), or $1 + (\text{HL} = \text{CM})$ (on systems with positive logic).

The expression $(\text{HL} = \text{CM})$ has the value -1 (or $+1$) when HL and CM are the same, 0 when they differ. Thus, the expression $1 - (\text{HL} = \text{CM})$ (or $1 + (\text{HL} = \text{CM})$ on positive systems) produces a value of 1 when player 1 wins, and 2 when player 2 wins!

OTHER FEATURES

Most versions of *Word Wars* use a RANDOMIZE statement or randomizing procedure to make sure the game doesn't play the same way each time. Readers unfamiliar with the use of random numbers in computer programs may wish to refer to *Character Race* in last month's issue.

As always, if you come up with a good enhancement or modification of one of our Beginner programs, we'd like to see it, and maybe mention it in a future issue. Send a print-out (no tapes or disks, please) to:

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730 Broadway
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If HL has value. and CM has value. then:
0 (low wins)	0 (player 1 high)	player 2 wins
0 (low wins)	-1 (player 2 high)	player 1 wins
-1 (high wins)	0 (player 1 high)	player 1 wins
-1 (high wins)	-1 (player 2 high)	player 2 wins

ADAM/Word Wars

```

10 DIM s(2)
20 r = 1
30 HOME
40 PRINT "TO RANDOMIZE, INPUT A"
50 INPUT "NUMBER GREATER THAN 1. ";n
60 FOR i = 1 TO n
70 n = RND(1)
80 NEXT i
90 HOME
100 PRINT TAB(12);"*WORD WARS*"
110 PRINT
120 PRINT "ROUND #";r
130 PRINT
140 hl = (RND(1) >= .5)
150 ln = INT(RND(1)*3)+5
160 al = INT(RND(1)*26)+65
170 IF hl THEN d$ = "HIGHER-":GOTO 190
180 d$ = "LOWER-"
190 PRINT "IN THIS ROUND, PLAYERS WILL"
200 PRINT "AIM FOR ";d$;"VALUED WORDS."
210 PRINT "THE WORDS MUST BE ";ln;" LETTERS"
220 PRINT "LONG AND MUST BEGIN WITH THE"
230 PRINT "LETTER ";CHR$(34);CHR$(al);CHR$(34);"."
240 FOR j = 1 TO 2
250 PRINT
260 PRINT "YOUR WORD, PLAYER ";j;
270 INPUT w$
280 IF LEN(w$) <> ln OR LEFT$(w$,1) <> CHR$(al) THEN 2
60
290 s(j) = 0
300 FOR k = 1 TO ln
310 s(j) = s(j)+ASC(MID$(w$,k,1))
320 NEXT k
330 NEXT j
340 PRINT
350 PRINT "ARE BOTH THESE WORDS IN YOUR"
360 INPUT "DICTIONARY? ";yn$
370 IF LEFT$(yn$,1) <> "Y" THEN 90
380 PRINT
390 IF s(1) <> s(2) THEN 430
400 PRINT "BOTH THESE WORDS HAVE"
410 PRINT "THE SAME VALUE."
420 GOTO 460
430 cm = (s(2) > s(1))
440 PRINT "PLAYER ";1+(hl = cm);" WINS, WITH A"
450 PRINT d$;"VALUED WORD."
460 PRINT
470 PRINT "PRESS <E> TO END OR ANY OTHER"
480 PRINT "KEY TO PLAY ANOTHER ROUND."
490 GET kp$
500 IF kp$ = "E" OR kp$ = "e" THEN END
510 r = r+1
520 GOTO 90

```

Apple II series/Word Wars

```

10 DIM S(2)
20 R = 1
30 HOME
40 PRINT "PRESS ANY KEY TO RANDOMIZE.";
50 POKE -16368,0
60 IF PEEK(-16384) < 128 THEN N = RND(1):GOTO 60
70 POKE -16368,0
80 HOME
90 PRINT TAB(15);"*WORD WARS*"
100 PRINT
110 PRINT "ROUND #";R
120 PRINT
130 HL = (RND(1) >= 0.5)
140 LN = INT(RND(1)*3)+5
150 AL = INT(RND(1)*26)+65
160 IF HL THEN D$ = "HIGHER-":GOTO 180
170 D$ = "LOWER-"
180 PRINT "IN THIS ROUND, PLAYERS WILL AIM FOR"
190 PRINT D$;"VALUED WORDS. THE WORDS MUST"

```

```

200 PRINT "BE ";LN;" LETTERS LONG AND MUST BEGIN"
210 PRINT "WITH THE LETTER ";CHR$(34);CHR$(AL);CHR$(34);"."
220 FOR J = 1 TO 2
230 PRINT
240 PRINT "YOUR WORD, PLAYER ";J;
250 INPUT W$
260 IF LEN(W$) <> LN OR LEFT$(W$,1) <> CHR$(AL) THEN 2
40
270 S(J) = 0
280 FOR K = 1 TO LN
290 S(J) = S(J)+ASC(MID$(W$,K,1))
300 NEXT K
310 NEXT J
320 PRINT
330 PRINT "ARE BOTH THESE WORDS IN YOUR"
340 INPUT "DICTIONARY? ";YNS
350 IF LEFT$(YNS,1) <> "Y" THEN 80
360 PRINT
370 IF S(1) = S(2) THEN PRINT "BOTH THESE WORDS HAVE T
HE SAME VALUE.":GOTO 410
380 CM = (S(2) > S(1))
390 PRINT "PLAYER ";1+(HL = CM);" WINS, WITH A"
400 PRINT D$;"VALUED WORD."
410 PRINT
420 PRINT "PRESS <E> TO END OR ANY OTHER KEY TO"
430 PRINT "PLAY ANOTHER ROUND."
440 GET KPS
450 IF KPS = "E" THEN END
460 R = R+1
470 GOTO 80

```

Atari 400, 800, 600/800XL, & 130XE/Word Wars

```

10 DIM D$(10),W$(20),YNS(1),S(2)
19 REM --PREPARE TO GET KEYPRESS IN LINE 400--
20 OPEN #1,4,0,"K:"
30 R=1
40 PRINT CHR$(125)
50 POSITION 15,0:PRINT "*WORD WARS*"
60 PRINT
70 PRINT "ROUND #";R
80 PRINT
90 HL=(RND(0)>=0.5)
100 LN=INT(RND(0)*3)+5
110 AL=INT(RND(0)*26)+65
120 IF HL THEN D$="HIGHER-":GOTO 140
130 D$="LOWER-"
140 PRINT "IN THIS ROUND, PLAYERS WILL AIM FOR"
150 PRINT D$;"VALUED WORDS. THE WORDS MUST"
160 PRINT "BE ";LN;" LETTERS LONG AND MUST BEGIN"
170 PRINT "WITH THE LETTER ";CHR$(34);CHR$(AL);CHR$(34);"."
180 FOR J=1 TO 2
190 PRINT
200 PRINT "YOUR WORD, PLAYER ";J;
210 INPUT W$
220 IF LEN(W$)<>LN OR W$(1,1)<>CHR$(AL) THEN 200
230 S(J)=0
240 FOR K=1 TO LN
250 S(J)=S(J)+ASC(W$(K,K))
260 NEXT K
270 NEXT J
280 PRINT
290 PRINT "ARE BOTH THESE WORDS IN YOUR"
300 PRINT "DICTIONARY";
310 INPUT YNS
320 IF YNS<>"Y" THEN 40
330 PRINT
340 IF S(1)=S(2) THEN PRINT "BOTH THESE WORDS HAVE THE
SAME VALUE.":GOTO 380
350 CM=(S(2)>S(1))
360 PRINT "PLAYER ";1+(HL=CM);" WINS, WITH A"
370 PRINT D$;"VALUED WORD."
380 PRINT
390 PRINT "PRESS ANY KEY TO PLAY ANOTHER ROUND.";

```

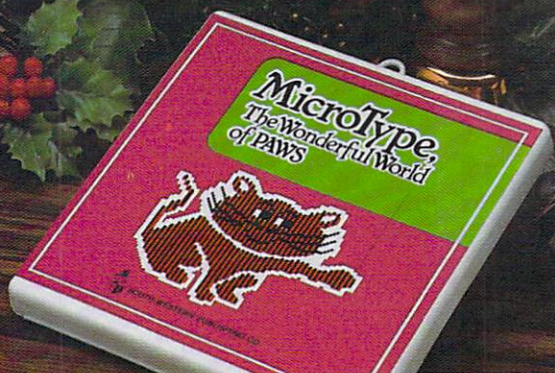
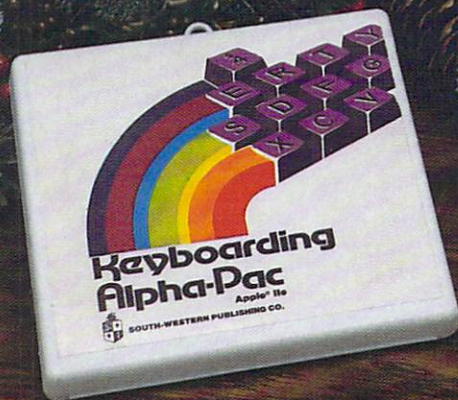

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```

400 GET #1,KP
410 R=R+1
420 GOTO 40

```

Commodore 64 & 128/Word Wars

```

10 DIM S(2)
20 R=1
30 PRINT CHR$(147);
40 PRINT TAB(15);"*WORD WARS*"
50 PRINT
60 PRINT "ROUND #";R
70 PRINT
80 HL=(RND(0)>=.5)
90 LN=INT(RND(0)*5)+4
100 AL=INT(RND(0)*26)+65
110 IF HL THEN D$="HIGHER-":GOTO 130
120 D$="LOWER-"
130 PRINT "IN THIS ROUND, PLAYERS WILL AIM FOR"
140 PRINT D$;"VALUED WORDS. THE WORDS MUST"
150 PRINT "BE";LN;"LETTERS LONG AND MUST BEGIN"
160 PRINT "WITH THE LETTER ";CHR$(34);CHR$(AL);CHR$(34);"."
170 FOR J=1 TO 2
180 PRINT
190 PRINT "YOUR WORD, PLAYER";J;
199 REM --CLEAR W$ FOR NEW INPUT--
200 W$=""
210 INPUT W$
220 IF LEN(W$)<>LN OR LEFT$(W$,1)<>CHR$(AL) THEN 190
230 S(J)=0
240 FOR K=1 TO LN
250 S(J)=S(J)+ASC(MID$(W$,K,1))
260 NEXT K
270 NEXT J
280 PRINT
289 REM --CLEAR YN$ FOR NEW INPUT--
290 YN$=""
300 PRINT "ARE BOTH THESE WORDS IN YOUR"
310 INPUT "DICTIONARY";YN$
320 IF LEFT$(YN$,1)<>"Y" THEN 30
330 PRINT
340 IF S(1)=S(2) THEN PRINT "BOTH THESE WORDS HAVE THE
SAME VALUE.":GOTO 380
350 CM=(S(2)>S(1))
360 PRINT "PLAYER";1-(HL=CM);"WINS, WITH A"
370 PRINT D$;"VALUED WORD."
380 PRINT
390 PRINT "PRESS ANY KEY TO PLAY ANOTHER ROUND."
400 GET KP$:IF KP$="" THEN 400
410 R=R+1
420 GOTO 30

```

IBM PC & compatibles*/Word Wars

```

10 DIM S(2)
20 R=1
30 RANDOMIZE
40 CLS
50 PRINT TAB(15);"*WORD WARS*"
60 PRINT
70 PRINT "ROUND #";R
80 PRINT
90 HL=(RND>=.5)
100 LN=INT(RND*3)+5
110 AL=INT(RND*26)+65
120 IF HL THEN D$="HIGHER-" ELSE D$="LOWER-"
130 PRINT "IN THIS ROUND, PLAYERS WILL AIM FOR"
140 PRINT D$;"VALUED WORDS. THE WORDS MUST"
150 PRINT "BE";LN;"LETTERS LONG AND MUST BEGIN"
160 PRINT "WITH THE LETTER ";CHR$(34);CHR$(AL);CHR$(34);"."
170 FOR J=1 TO 2
180 PRINT
190 PRINT "YOUR WORD, PLAYER";J;

```

```

200 INPUT W$
210 IF LEN(W$)<>LN OR LEFT$(W$,1)<>CHR$(AL) THEN 190
220 S(J)=0
230 FOR K=1 TO LN
240 S(J)=S(J)+ASC(MID$(W$,K,1))
250 NEXT K
260 NEXT J
270 PRINT
280 PRINT "ARE BOTH THESE WORDS IN YOUR"
290 INPUT "DICTIONARY";YN$
300 IF LEFT$(YN$,1)<>"Y" THEN 40
310 PRINT
320 IF S(1)=S(2) THEN PRINT "BOTH THESE WORDS HAVE THE
SAME VALUE.":GOTO 360
330 CM=(S(2)>S(1))
340 PRINT "PLAYER";1-(HL=CM);"WINS, WITH A"
350 PRINT D$;"VALUED WORD."
360 PRINT
370 PRINT "PRESS ANY KEY TO PLAY ANOTHER ROUND."
380 IF INKEY$="" THEN 380 ELSE R=R+1:GOTO 40

```

*This program has been tested on the following computers, using the BASICS shown: IBM PC w/Color Graphics Adapter or Monochrome/Printer Card, w/Disk BASIC D2.00 or Advanced BASIC A2.00, IBM PCjr, w/Cassette BASIC C1.20 or Cartridge BASIC J1.00, Tandy 1000, w/GW-BASIC 2.02 version 00.05.00.

Macintosh w/Microsoft BASIC 2.0/Word Wars

```

DIM S(2)
R=1
RANDOMIZE TIMER
MAINLOOP:
CLS
WINDOW 1,"*WORD WARS*"
PRINT
PRINT "ROUND #";R
PRINT
HL=(RND(1)>=.5)
LN=INT(RND(1)*3)+5
AL=INT(RND(1)*26)+65
IF HL THEN D$="HIGHER-" ELSE D$="LOWER-"
PRINT "IN THIS ROUND, PLAYERS WILL AIM FOR ";D$;"V
ALUED WORDS."
PRINT "THE WORDS MUST BE";LN;"LETTERS LONG"
PRINT "AND MUST BEGIN WITH THE LETTER ";CHR$(34);C
HR$(AL);CHR$(34);"."
FOR J=1 TO 2
PRINT
THISPLAYER:
PRINT "YOUR WORD, PLAYER";J;
INPUT W$
IF LEN(W$)<>LN OR LEFT$(W$,1)<>CHR$(AL) THEN THI
SPLAYER
S(J)=0
FOR K=1 TO LN
S(J)=S(J)+ASC(MID$(W$,K,1))
NEXT K
NEXT J
PRINT
INPUT "ARE BOTH THESE WORDS IN YOUR DICTIONARY";YN
$
IF LEFT$(YN$,1)<>"Y" THEN MAINLOOP
PRINT
IF S(1)=S(2) THEN PRINT "BOTH THESE WORDS HAVE THE
SAME VALUE.":GOTO NEXTROUND
CM=(S(2)>S(1))
PRINT "PLAYER";1-(HL=CM);"WINS, WITH A ";D$;"VALUE
D WORD."
NEXTROUND:
PRINT
PRINT "PRESS ANY KEY TO PLAY ANOTHER ROUND.";
WAITFORKEY:
IF INKEY$="" THEN WAITFORKEY ELSE R=R+1:GOTO MAINL
OOP

```


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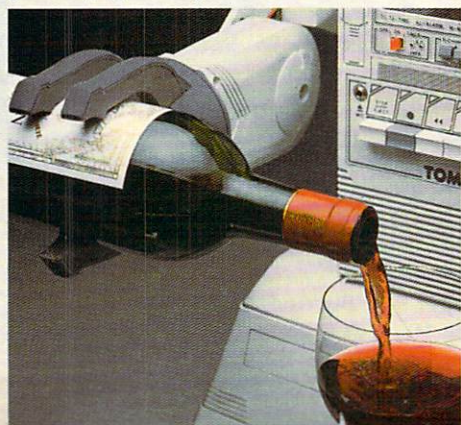
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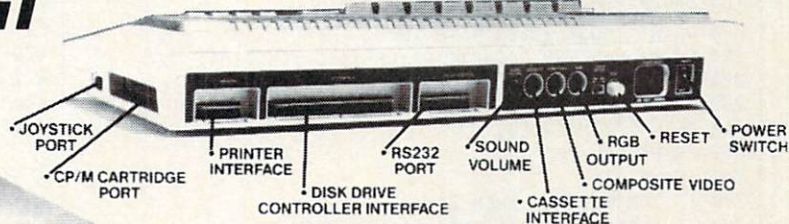
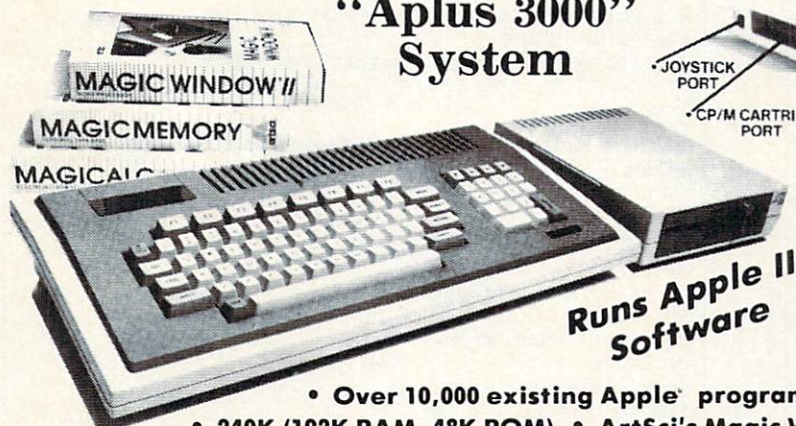
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Disk Drive	included	Extra Cost	Extra Cost
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TI-99/4A/Word Wars

```

10 DIM S(2)
20 R=1
30 RANDOMIZE
40 CALL CLEAR
50 PRINT TAB(9);"*WORD WARS*"
60 PRINT
70 PRINT "ROUND #";R
80 PRINT
90 HL=(RND>=.5)
100 LN=INT(RND*3)+5
110 AL=INT(RND*26)+65
120 IF HL THEN 150
130 D$="LOWER-"
140 GOTO 160
150 D$="HIGHER-"
160 PRINT "IN THIS ROUND, PLAYERS WILL"
170 PRINT "AIM FOR ";D$;"VALUED"
180 PRINT "WORDS. THE WORDS MUST"
190 PRINT "BE";LN;"LETTERS LONG AND"
200 PRINT "MUST BEGIN WITH THE"
210 PRINT "LETTER ";CHR$(34);CHR$(AL);CHR$(34);"."
220 FOR J=1 TO 2
230 PRINT
240 PRINT "YOUR WORD,"
250 PRINT "PLAYER";J;
260 INPUT W$
270 IF LEN(W$)<>LN THEN 240
280 IF SEG$(W$,1,1)<>CHR$(AL) THEN 240
290 S(J)=0
300 FOR K=1 TO LN
310 S(J)=S(J)+ASC(SEG$(W$,K,1))
320 NEXT K
330 NEXT J
340 PRINT
350 PRINT "ARE BOTH THESE WORDS IN"
360 PRINT "YOUR DICTIONARY";
370 INPUT YNS
380 IF SEG$(YNS,1,1)<>"Y" THEN 40
390 PRINT
400 IF S(1)<>S(2) THEN 440
410 PRINT "BOTH THESE WORDS HAVE THE"
420 PRINT "SAME VALUE."
430 GOTO 470
440 CM=(S(2)>S(1))
450 PRINT "PLAYER";1-(HL=CM);"WINS, WITH A"
460 PRINT D$;"VALUED WORD."
470 PRINT
480 PRINT "PRESS ANY KEY TO PLAY"
490 PRINT "ANOTHER ROUND."
500 CALL KEY(3,KP,ST)
510 IF ST=0 THEN 500
520 R=R+1
530 GOTO 40

```

TRS-80 Color Computer/Word Wars

```

10 CLEAR 500
20 DIM S(2)
30 R=1
40 CLS
50 PRINT TAB(10);"*WORD WARS*"
60 PRINT
70 PRINT "ROUND #";R
80 PRINT
90 HL=RND(2)-2
100 LN=RND(4)+4
110 AL=RND(26)+64
120 IF HL THEN D$="HIGHER-" ELSE D$="LOWER-"
130 PRINT "IN THIS ROUND, PLAYERS WILL AIM"
140 PRINT "FOR ";D$;"VALUED WORDS."
150 PRINT "THE WORDS MUST BE";LN;"LETTERS"
160 PRINT "LONG AND MUST BEGIN WITH THE"
170 PRINT "LETTER ";CHR$(34);CHR$(AL);CHR$(34);"."
180 FOR J=1 TO 2

```

```

190 PRINT
200 PRINT "YOUR WORD, PLAYER";J;
210 INPUT W$
220 IF LEN(W$)<>LN OR LEFT$(W$,1)<>CHR$(AL) THEN 200
230 S(J)=0
240 FOR K=1 TO LN
250 S(J)=S(J)+ASC(MID$(W$,K,1))
260 NEXT K
270 NEXT J
280 PRINT
290 PRINT "ARE BOTH THESE WORDS IN YOUR"
300 INPUT "DICTIONARY";YNS
310 IF LEFT$(YNS,1)<>"Y" THEN 40
320 PRINT
330 IF S(1)<>S(2) THEN 370
340 PRINT "BOTH THESE WORDS HAVE"
350 PRINT "THE SAME VALUE."
360 GOTO 400
370 CM=(S(2)>S(1))
380 PRINT "PLAYER";1-(HL=CM);"WINS, WITH A"
390 PRINT D$;"VALUED WORD."
400 PRINT
410 PRINT "PRESS ANY KEY TO PLAY ANOTHER"
420 PRINT "ROUND."
430 IF INKEY$="" THEN 430 ELSE R=R+1:GOTO 40

```

TRS-80 Models III & 4 (w/Model III BASIC)/Word Wars

```

10 CLEAR 500
20 DIM S(2)
30 R=1
40 CLS
50 PRINT TAB(27);"*WORD WARS*"
60 PRINT
70 PRINT "ROUND #";R
80 PRINT
90 HL=RND(2)-2
100 LN=RND(4)+4
110 AL=RND(26)+64
120 IF HL THEN D$="HIGHER-" ELSE D$="LOWER-"
130 PRINT "IN THIS ROUND, PLAYERS WILL AIM FOR"
140 PRINT D$;"VALUED WORDS. THE WORDS MUST"
150 PRINT "BE";LN;"LETTERS LONG AND MUST BEGIN"
160 PRINT "WITH THE LETTER ";CHR$(34);CHR$(AL);CHR$(34);"."
170 FOR J=1 TO 2
180 PRINT
190 PRINT "YOUR WORD, PLAYER";J;
200 INPUT W$
210 IF LEN(W$)<>LN OR LEFT$(W$,1)<>CHR$(AL) THEN 190
220 S(J)=0
230 FOR K=1 TO LN
240 S(J)=S(J)+ASC(MID$(W$,K,1))
250 NEXT K
260 NEXT J
270 PRINT
280 INPUT "ARE BOTH THESE WORDS IN YOUR DICTIONARY";YNS
290 IF LEFT$(YNS,1)<>"Y" THEN 40
300 PRINT
310 IF S(1)=S(2) THEN PRINT "BOTH THESE WORDS HAVE THE"
320 CM=(S(2)>S(1))
330 PRINT "PLAYER";1-(HL=CM);"WINS, WITH A"
340 PRINT D$;"VALUED WORD."
350 PRINT
360 PRINT "PRESS ANY KEY TO PLAY ANOTHER ROUND.";
370 IF INKEY$="" THEN 370 ELSE R=R+1:GOTO 40

```

VIC-20/Word Wars

```

10 DIM S(2)
20 R=1
30 PRINT CHR$(147);

```



```

40 PRINT TAB(5);"*WORD WARS*"
50 PRINT
60 PRINT "ROUND #";R
70 PRINT
80 HL=(RND(0)>=0.5)
90 LN=INT(RND(0)*5)+4
100 AL=INT(RND(0)*26)+65
110 IF HL THEN D$="HIGHER-":GOTO 130
120 D$="LOWER-"
130 PRINT "IN THIS ROUND,"
140 PRINT "PLAYERS WILL AIM"
150 PRINT "FOR ";D$;"VALUED"
160 PRINT "WORDS. THE WORDS"
170 PRINT "MUST BE";LN;"LETTERS"
180 PRINT "LONG AND MUST"
190 PRINT "BEGIN WITH THE"
200 PRINT "LETTER ";CHR$(34);CHR$(AL);CHR$(34);"."
210 FOR J=1 TO 2
220 PRINT
230 PRINT "YOUR WORD,"
240 PRINT "PLAYER";J;
249 REM --CLEAR W$ FOR NEW INPUT--
250 W$=""
260 INPUT W$
270 IF LEN(W$)<>LN OR LEFT$(W$,1)<>CHR$(AL) THEN 230
280 S(J)=0
290 FOR K=1 TO LN
300 S(J)=S(J)+ASC(MID$(W$,K,1))
310 NEXT K
320 NEXT J
330 PRINT
339 REM --CLEAR YNS FOR NEW INPUT--
340 YNS=""
350 PRINT "ARE BOTH THESE WORDS"
360 INPUT "IN YOUR DICTIONARY";YNS
370 IF LEFT$(YNS,1)<>"Y" THEN 30
380 PRINT
390 IF S(1)<>S(2) THEN 430
400 PRINT "BOTH THESE WORDS HAVE"
410 PRINT "THE SAME VALUE."
420 GOTO 460
430 CM=(S(2)>S(1))
440 PRINT "PLAYER";1-(HL=CM);"WINS, WITH A"
450 PRINT D$;"VALUED WORD."
460 PRINT
470 PRINT "PRESS ANY KEY TO PLAY"
480 PRINT "ANOTHER ROUND."
490 GET KP$:IF KP$="" THEN 490
500 R=R+1
510 GOTO 30

```

PROGRAMMING P.S.

Corrections to previous months' programs

Commodore 64 w/disk drive or Datassette (printer optional)/Home Information Manager (August 1985, pages 61-64)

In the September issue we recommended you make some changes to prevent malfunction in case you try to GET or STORE a filebox that's completely empty. Here are those changes again, with additional ones.

Please change lines 1690, 1850, 1860, and 1930 to read as follows:

```

1690 ON SE-2 GOTO 1750,1800,1780
1850 FOR J=1 TO FT:PRINT#2,CHR$(34);F$(J);CHR$(34):NEX
T J:IF RT=0 THEN 1870
1860 FOR J=1 TO RT*FT:PRINT#2,CHR$(34);Y$(J);CHR$(34):
NEXT J
1930 FOR J=1 TO FT:INPUT#2,F$(J):NEXT J:IF RT=0 THEN 1
950

```

Also, add line 1955:

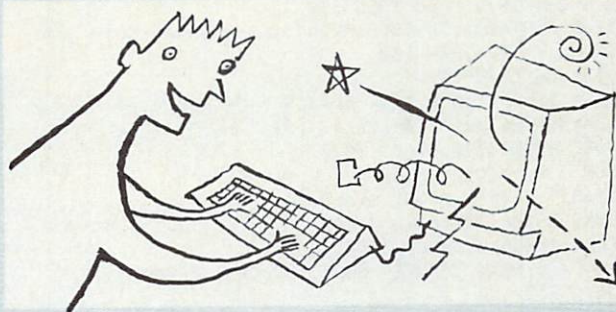
```

1955 MAX=0:IF FT>0 THEN MAX=INT(2700/FT)

```

GET 'EM

BY JOEY LATIMER



Get 'Em is a fast-paced game, guaranteed to give your reflexes a workout. As in a western, the object is to "Get 'em before they get away!" But instead of chasing bank robbers, in *Get 'Em* you try to hit valuable targets before they turn into less precious, or even harmful, ones.

On the left side of the screen, a puck bounces up and down. On the right, separated by deadly bars, are the targets, which

change every moment. On all systems but the Macintosh (which uses graphic figures), the targets are characters—"+", "*", "s", and "/"—which add or subtract different points from your score when hit. To go for a target, press the space bar when you think the puck is lined up properly. This will send it shooting sideways toward the targets. If you miss one and hit a bar, you lose—so be careful!

ADAM/Get 'Em

```

10 LOMEM: 29000
20 DIM d$(4),tr(19)
29 REM --TURN OFF CURSOR--
30 POKE 16953,0
40 hs = 0:s = 0:sp$ = CHR$(32)
50 FOR i = 1 TO 4:READ d$(i):NEXT i
60 FOR i = 28000 TO 28012:READ a:POKE i,a:NEXT i
70 HOME
80 PRINT "Score:0";TAB(15);"High Score:";hs
90 HTAB 2:INVERSE:PRINT SPC(29)
100 FOR i = 3 TO 21:VTAB i:HTAB 2:PRINT sp$
110 VTAB i:HTAB 30:PRINT sp$:NEXT i
120 HTAB 2:PRINT SPC(29):NORMAL:PRINT
130 PRINT "Pnts: +=100 *=250 $=500 /=-100";
140 INVERSE:c = 2:j = 20:FOR i = 4 TO 20 STEP 2
150 VTAB i:HTAB j:PRINT SPC(30-j);
160 tr(c) = j:j = j+1-2*(i >= 12)
170 c = c+2:NEXT i:NORMAL
180 FOR i = 3 TO 21 STEP 2
190 q = ABS(INT(RND(1)*8)-3):IF q = 0 THEN q = 1
200 VTAB i:HTAB 29:PRINT d$(q);:tr(i-2) = q:NEXT i
209 REM --"CALL 28007" PREPARES FOR KEYPRESS--
210 f = 1:a = 4:d = INT(RND(1)*18)+3:CALL 28007
220 VTAB d:HTAB a:INVERSE:PRINT sp$;:NORMAL
229 REM --"PEEK(64885)" TELLS LATEST KEYPRESS--
230 IF PEEK(64885) = 32 THEN CALL 28007:GOTO 340
240 l = INT(RND(1)*19)+3:IF l/2 = INT(l/2) THEN 270
250 q = ABS(INT(RND(1)*8)-3):IF q = 0 THEN q = 1
260 VTAB l:HTAB 29:PRINT d$(q);:tr(l-2) = q
270 VTAB d:HTAB a:PRINT sp$;
280 d = d+f:IF d > 3 AND d < 21 THEN 220
289 REM --THIS POKE AND CALL MAKE A SOUND--
290 f = -f:POKE 28006,144:CALL 28000
300 POKE 28006,141:CALL 28000

```


ARCADE GAME

```

310 POKE 28006,34+f:CALL 28000
320 FOR t = 1 TO 5:NEXT t:POKE 28006,159:CALL 28000
330 GOTO 220
340 IF d/2 = INT(d/2) THEN nd = tr(d-2):GOTO 360
350 nd = 29
360 VTAB d:HTAB a:PRINT sp$;
370 a = a+1:IF a = nd THEN 390
380 VTAB d:HTAB a:INVERSE:PRINT sp$;:NORMAL:GOTO 360
390 IF nd <> 29 THEN 500
400 p$ = d$(tr(d-2))
410 pt = 50-25*(p$ = "*")-40*(p$ = "+")-60*(p$ = "/")
420 v = SGN(pt):x = 50-20*(v < 0)
430 POKE 28006,144:CALL 28000
440 FOR i = v TO pt STEP v:s = s+v*10
450 VTAB 1:HTAB 8:PRINT s;sp$;
460 POKE 28006,128:CALL 28000
470 POKE 28006,x:CALL 28000
480 x = x-v:NEXT i:POKE 28006,159:CALL 28000
490 GOTO 210
500 POKE 28006,128:CALL 28000
510 POKE 28006,50:CALL 28000
520 POKE 28006,144:CALL 28000
530 FOR t = 1 TO 100:NEXT t
540 POKE 28006,159:CALL 28000
550 HOME:PRINT "Sorry, you missed!"
560 PRINT:PRINT "Your score: ";s
570 PRINT:PRINT "High score: ";hs
580 IF s <= hs THEN 610
590 hs = s:PRINT:PRINT "Congratulations!"
600 PRINT:PRINT "You beat the high score!"
610 PRINT:PRINT "Press <E> to end, or"
620 PRINT "any other key to play again."
630 GET kp$
639 REM ---"POKE 16953,95" TURNS CURSOR BACK ON---
640 IF kp$ = "E" OR kp$ = "e" THEN POKE 16953,95:END
650 s = 0:GOTO 70
1000 DATA +,*,*,/,
2000 DATA 58,102,109,211,255,201,0,62,0,50,117,253,201

```

Apple II series/Get 'Em

```

10 DIM D$(8)
20 HS = 0:S = 0:SP$ = CHR$(32)
30 FOR I = 0 TO 36:READ A:POKE 768+I,A:NEXT I
40 FOR I = 1 TO 8:READ D$(I):NEXT I
50 HOME:PRINT " SCORE: 0";TAB(21);"HIGH SCORE: ";HS
60 INVERSE:PRINT SPC(38):PRINT
70 FOR I = 1 TO 19:PRINT SP$;HTAB 38:PRINT SP$:NEXT I
80 PRINT SPC(38):PRINT:NORMAL
90 PRINT " POINTS: +=100 *=250 $=500 /=-100";
100 INVERSE:J = 25:FOR I = 4 TO 20 STEP 2
110 VTAB I:HTAB J:PRINT SPC(38-J)
120 J = J+1-2*(I >= 12):NEXT I:NORMAL
130 FOR I = 3 TO 21 STEP 2:VTAB I:HTAB 37
140 PRINT D$(INT(RND(1)*8)+1):NEXT I
150 F = 1:A = 4:D = INT(RND(1)*17)+3:POKE -16368,0
160 VTAB D:HTAB A:INVERSE:PRINT SP$;:NORMAL
170 IF PEEK(-16384) = 160 THEN POKE -16368,0:GOTO 240
180 L = INT(RND(1)*19)+3:IF L/2 = INT(L/2) THEN 200
190 VTAB L:HTAB 37:PRINT D$(INT(RND(1)*8)+1)
200 VTAB D:HTAB A:PRINT SP$;
210 D = D+F:IF D > 3 AND D < 21 THEN 160
220 F = -F
230 POKE 8,70-10*F:POKE 6,2:CALL 768:GOTO 160
240 VTAB D:HTAB A:PRINT SP$;:A = A+1
250 P = SCRN(A-1,2*(D-1))+16*SCRN(A-1,2*(D-1)+1)-128
260 IF P <> 32 THEN 280
270 VTAB D:HTAB A:INVERSE:PRINT SP$;:NORMAL:GOTO 240
280 IF P = -96 THEN 360
290 P$ = CHR$(P)
300 PT = 50-25*(P$ = "*")-40*(P$ = "+")-60*(P$ = "/")
310 V = SGN(PT):X = 50+60*(V > 0)
320 FOR I = V TO PT STEP V:S = S+V*10
330 S = S+V*10:VTAB 1:HTAB 9:PRINT S;SP$
340 POKE 8,X:POKE 6,1:CALL 768

```

```

350 X = X-V+4*(V < 0):NEXT I:GOTO 150
360 POKE 8,200:POKE 6,100:CALL 768
370 HOME:PRINT "SORRY, YOU MISSED!"
380 PRINT:PRINT "YOUR SCORE: ";S
390 PRINT:PRINT "HIGH SCORE: ";HS
400 IF S <= HS THEN 430
410 HS = S:PRINT:PRINT "CONGRATULATIONS!"
420 PRINT:PRINT "YOU BEAT THE HIGH SCORE!"
430 PRINT:PRINT "PRESS <E> TO END OR ANY"
440 PRINT "OTHER KEY TO PLAY AGAIN.";
450 GET K$:IF K$ = "E" THEN END
460 S = 0:GOTO 50
1000 DATA 165,8,201,2,176,2,169,2,74,133,10,164,8
1010 DATA 240,8,173,48,192,234,234,136,208,251,56
1020 DATA 165,7,229,10,133,7,176,235,198,6,208,231,96
2000 DATA +,*,*,*,/,/,/,/

```

Atari 400, 800, 600/800XL, & 130XE/Get 'Em

```

10 DIM C$(36),D$(8),T$(1),P$(1),SP$(1),L0(4,2),CH(4)
20 OPEN #1,4,0,"K:":OPEN #6,12,0,"S:"
30 POKE 82,0:POKE 752,1
40 C$=CHR$(160):C$(36)=C$:C$(2)=C$:SP$=CHR$(32)
50 HS=0:S=0
60 FOR I=1 TO 8:READ T$:D$(LEN(D$)+1)=T$:NEXT I
70 FOR I=1 TO 4:READ A,B,C
80 CH(I)=A:L0(I,1)=B:L0(I,2)=C:NEXT I
90 PRINT CHR$(125);
100 POSITION 3,0:PRINT "SCORE: 0"
110 POSITION 19,0:PRINT "HIGH SCORE: ";HS
120 PRINT SP$;SP$;C$:FOR I=2 TO 20
130 POSITION 1,I:PRINT CHR$(160)
140 POSITION 38,I:PRINT CHR$(160):NEXT I
150 PRINT SP$;SP$;C$
160 PRINT " POINTS: +=100 *=250 $=500 /=-100";
170 FOR I=1 TO 4:POSITION L0(I,1),L0(I,2)
180 PRINT CHR$(CH(I));:NEXT I
190 J=13:FOR I=3 TO 19 STEP 2
200 POSITION 38-J,I:PRINT C$(1,J)
210 J=J-1+2*(I>=11):NEXT I
220 FOR I=2 TO 20 STEP 2:POSITION 37,I
230 N=INT(RND(0)*8)+1:PRINT D$(N,N):NEXT I
240 POKE 764,255:F=1:A=4:D=INT(RND(1)*16)+3
250 POSITION A,D:PRINT CHR$(160);
260 K=PEEK(764):IF K=33 THEN POKE 764,255:GOTO 330
270 L=INT(RND(1)*19)+2:IF L/2<>INT(L/2) THEN 290
280 POSITION 37,L:N=INT(RND(1)*8)+1:PRINT D$(N,N)
290 POSITION A,D:PRINT SP$;
300 D=D+F:IF D>2 AND D<20 THEN 250
310 F=-F:SOUND 0,100-7*F,10,8
320 FOR T=1 TO 5:NEXT T:SOUND 0,0,0,0:GOTO 250
330 POSITION A,D:PRINT SP$;
340 A=A+1:LOCATE A,D:P:IF P<>32 THEN 360
350 POSITION A,D:PRINT CHR$(160);:GOTO 330
360 IF P=160 THEN 430
370 P$=CHR$(P)
380 PT=50-25*(P$="*")-40*(P$="+")-60*(P$="/")
390 V=SGN(PT):X=50+150*(PT>0)
400 FOR I=V TO PT STEP V:S=S+V*10
410 POSITION 10,0:PRINT S;SP$;:SOUND 0,X,10,8
420 X=X+5-9*(V>0):NEXT I:SOUND 0,0,0,0:GOTO 240
430 SOUND 0,200,10,8
440 FOR DE=1 TO 15:NEXT DE:SOUND 0,0,0,0
450 PRINT CHR$(125);:PRINT "SORRY, YOU MISSED!"
460 PRINT:PRINT "YOUR SCORE: ";S
470 PRINT:PRINT "HIGH SCORE: ";HS
480 IF S<=HS THEN 510
490 HS=S:PRINT:PRINT "CONGRATULATIONS!"
500 PRINT:PRINT "YOU BEAT THE HIGH SCORE!"
510 PRINT:PRINT "PRESS <RETURN> TO PLAY AGAIN."
520 GET #1,K:IF K<>155 THEN 520
530 S=0:GOTO 90
1000 DATA +,*,*,*,/,/,/,/
1010 DATA 8,1,1,10,38,1,138,1,21,136,38,21

```


Commodore 64 & 128 (C 64 mode)/Get 'Em

```
10 DIM D$(8),LO(4),CH(4)
20 HS=0:S=0:SB=1024:SID=54272
30 POKE 53281,0:POKE 53280,0
40 FOR I=SID TO SID+23:POKE I,0:NEXT I
50 POKE SID+24,15:POKE SID+5,68:POKE SID+6,68
60 R$=CHR$(18):SP$=CHR$(32)
70 S$=R$+CHR$(31)+SP$:C$=R$+CHR$(28)
80 FOR I=1 TO 39:C$=C$+SP$:NEXT I
90 FOR I=1 TO 8:READ C,D$(I)
100 D$(I)=CHR$(C)+D$(I):NEXT I
110 FOR I=1 TO 4:READ LO(I),CH(I):NEXT I
120 PRINT CHR$(147);
130 PRINT TAB(5);CHR$(154);"SCORE:";CHR$(158);S;
140 PRINT TAB(20);CHR$(154);"HIGH SCORE:";CHR$(158);HS
150 PRINT C$:FOR I=1 TO 21
160 PRINT R$;CHR$(128);SP$;TAB(38);SP$:NEXT I
170 PRINT C$
180 PRINT CHR$(154);"POINTS: ";D$(1);"=100 ";
190 PRINT D$(3);"=250 ";D$(5);"=500 ";D$(6);"=-100";
200 FOR I=1 TO 4:POKE LO(I),CH(I)
210 POKE LO(I)+54272,2:NEXT I
220 J=25:FOR I=2 TO 10 STEP 2:POKE 214,I:PRINT
230 PRINT TAB(J);LEFT$(C$,40-J)
240 POKE 214,22-I:PRINT
250 PRINT TAB(J);LEFT$(C$,40-J):J=J+1:NEXT I
260 FOR I=1 TO 21 STEP 2:POKE 214,I:PRINT
270 PRINT TAB(37);D$(INT(RND(1)*8)+1):NEXT I
280 F=1:A=4:D=INT(RND(1)*18)+3
290 POKE 214,D:PRINT:PRINT TAB(A);S$;
300 GET K$:IF K$=SP$ THEN 370
310 L=INT(RND(1)*21)+1:IF L/2=INT(L/2) THEN 330
320 POKE 214,L:PRINT:PRINT TAB(37);D$(INT(RND(1)*8)+1)
330 POKE 214,D:PRINT:PRINT TAB(A);SP$;
340 D=D+F:IF D>1 AND D<21 THEN 290
350 F=-F:POKE SID+1,35+7*F:POKE SID+4,17
360 FOR T=1 TO 5:NEXT T:POKE SID+4,0:GOTO 290
370 POKE 214,D:PRINT:PRINT TAB(A);SP$;
380 A=A+1:P=PEEK(SB+A+(D+1)*40):IF P<>32 THEN 400
390 POKE 214,D:PRINT:PRINT TAB(A);S$:GOTO 370
400 IF P=160 THEN 510
410 P$=CHR$(P)
420 PT=50+25*(P$="*")+40*(P$="+")+60*(P$="/")
430 V=SGN(PT):X=50+40*(V>0)
440 POKE SID+1,0:POKE SID+4,33
450 FOR I=V TO PT STEP V
460 S=S+V*10
470 PRINT CHR$(19);TAB(11);RIGHT$(C$,5)
480 PRINT CHR$(19);TAB(11);CHR$(158);S
490 POKE SID+1,X
500 X=X+V+4*(V<0):NEXT I:POKE SID+4,0:GOTO 280
510 POKE SID+1,9:POKE SID+4,33
520 FOR Q=1 TO 15:NEXT Q:POKE SID+4,0
530 PRINT CHR$(147);CHR$(5);"SORRY, YOU MISSED!"
540 PRINT:PRINT "YOUR SCORE: ";S
550 PRINT:PRINT "HIGH SCORE: ";HS
560 IF S<=HS THEN 590
570 HS=S:PRINT:PRINT "CONGRATULATIONS!"
580 PRINT:PRINT "YOU BEAT THE HIGH SCORE!"
590 PRINT:PRINT "PRESS <RETURN> TO PLAY AGAIN."
600 GET K$:IF K$<>CHR$(13) THEN 600
610 S=0:GOTO 120
1000 DATA 4,+,5,*,6,$,7,/4,+,5,*,7,/7,/
1010 DATA 1064,233,1102,223,1944,95,1982,105
```

IBM PC & compatibles*/Get 'Em

```
10 DIM D$(8),C(8)
20 WIDTH 40:KEY OFF:SCREEN 0,1:LOCATE 1,1,0
30 HS=0:S=0:SP$=CHR$(32)
40 FOR I=1 TO 8:READ C(I),D$(I):NEXT I
50 CLS:COLOR 14:PRINT " SCORE:";TAB(19);"HIGH SCORE:"
60 LOCATE 1,9:COLOR 15:PRINT S
70 LOCATE 1,30:COLOR 7:PRINT HS
80 COLOR 4:PRINT STRING$(39,219)
```

```
90 FOR I=1 TO 19
100 PRINT CHR$(219);SPC(37);CHR$(219):NEXT I
110 PRINT STRING$(39,219)
120 COLOR 14
130 PRINT " POINTS: +=100 *=250 $=500 /=-100";
140 COLOR 4:J=25:FOR I=4 TO 20 STEP 2
150 LOCATE I,J:PRINT STRING$(40-J,219)
160 J=J+2*(I>12):NEXT I
170 FOR I=3 TO 21 STEP 2:D=INT(RND*8)+1
180 COLOR C(D):LOCATE I,37:PRINT D$(D):NEXT I
190 F=1:A=4:D=INT(RND*18)+3
200 COLOR 1:LOCATE D,A:PRINT CHR$(219)
210 K$=INKEY$:IF K$=SP$ THEN 270
220 L=INT(RND*19)+3:IF L MOD 2=0 THEN 240
230 R=INT(RND*8)+1:LOCATE L,37:COLOR C(R):PRINT D$(R)
240 LOCATE D,A:PRINT SP$
250 D=D+F:IF D>3 AND D<21 THEN 200
260 F=-F:SOUND 400+50*F,.5:GOTO 200
270 LOCATE D,A:PRINT SP$
280 A=A+1:P=SCREEN(D,A):IF P<>32 THEN 310
290 LOCATE D,A:COLOR 1:PRINT CHR$(219)
300 FOR T=1 TO 3:NEXT T:GOTO 270
310 IF P=219 THEN 380
320 P$=CHR$(P)
330 PT=50+25*(P$="*")+40*(P$="+")+60*(P$="/")
340 V=SGN(PT):X=80+70*(V>0)
350 FOR I=V TO PT STEP V
360 S=S+V*10:COLOR 7:LOCATE 1,9:PRINT S;SP$
370 SOUND X,1:X=X+V*10+40*(V<0):NEXT I:GOTO 190
380 SOUND 200,5
390 CLS:COLOR 15:PRINT "SORRY, YOU MISSED!"
400 PRINT:PRINT "YOUR SCORE:";S
410 PRINT:PRINT "HIGH SCORE:";HS
420 IF S<=HS THEN 450
430 HS=S:PRINT:PRINT "CONGRATULATIONS!"
440 PRINT:PRINT "YOU BEAT THE HIGH SCORE!"
450 PRINT:PRINT "PRESS <ENTER> TO PLAY AGAIN."
460 K$=INKEY$:IF K$<>CHR$(13) THEN 460
470 S=0:GOTO 50
1000 DATA 4,+,5,*,6,$,7,/4,+,5,*,7,/7,/
```

*This program has been tested on the following computers, using the BASICS shown: IBM PC w/Color Graphics Adapter, w/Disk BASIC D2.00 or Advanced BASIC A2.00, IBM PCjr, w/Cartridge BASIC J1.00, Tandy 1000, w/GW-BASIC 2.02 version 00.05.00.

Macintosh w/Microsoft BASIC 2.0/Get 'Em

```
SETUP:
  DIM TX(65),TRX(19)
  HS=0:S=0:GOTTEN=0
  WINDOW 1,"*GET 'EM!*"
DRAWMAINSCREEN:
  CLS:PRINT TAB(6);"Score: 0";TAB(40);"High Score:";
HS:
  LOCATE 18,1:PRINT TAB(6);"Points:";
  PRINT TAB(20);"=100";TAB(30);"=250";
  PRINT TAB(40);"=500";TAB(50);"=-100";
  LINE (20,20)-(460,268),33,BF
  LINE (30,30)-(450,258),30,BF
  J=150:C=2
  FOR I=42 TO 138 STEP 24
    LINE (450-J,I+1)-(450,I+11),33,BF:TRX(C)=450-J
    LINE (450-J,277-I)-(450,287-I),33,BF:TRX(20-C)=450-J
  J=J-10:C=C+2
  NEXT I
  REM --DRAW TARGETS--
  FOR I=140 TO 380 STEP 80
    LINE (I,274)-(I+10,284),,B
  NEXT I
  LINE (225,274)-(225,284)
  LINE (300,279)-(310,279)
  LINE (380,274)-(390,284)
  IF GOTTEN THEN PUTTARGETS
  REM --STORE TARGET IMAGES IN ARRAY TX--
  C=0
  FOR I=140 TO 380 STEP 80
```



```

GET (I,274)-(I+10,284),T%(C*13):C=C+1
NEXT I
GET (20,20)-(30,30),T%(52):GOTTEN=-1
PUTTARGETS:
FOR I=1 TO 19 STEP 2
  GOSUB DISTRIBUTION
  PUT (438,I*12+19),T%(Q*13):TR%(I)=Q
NEXT I
START:
F=12:A=50:D=(INT(RND*18)+1)*12+19
MAINLOOP:
WHILE INKEY$<>CHR$(32)
  PUT (A,D),T%(52)
  I=INT(RND*20)+1:IF I MOD 2=0 THEN NOTARG
REM --PUT NEW TARGET ON SCREEN--
  J=I*12+19:PUT (438,J),T%(TR%(I)*13)
  GOSUB DISTRIBUTION
  PUT (438,J),T%(Q*13):TR%(I)=Q
NOTARG:
  PUT (A,D),T%(52)
  D=D+F:IF D=31 OR D=247 THEN F=-F:SOUND 440+F,1,8
WEND
REM --MAKE PUCK MOVE TOWARD TARGETS--
P=(D-19)/12
IF P MOD 2=0 THEN LM=TR%(P) ELSE LM=438
WHILE A<LM
  PUT (A,D),T%(52):PUT (A,D),T%(52):A=A+5
WEND
REM --CALCULATE VALUE OF TARGET; MODIFY SCORE--
IF LM>438 THEN ENDGAME
TARGET=TR%(P)
PT=10-15*(TARGET=1)-40*(TARGET=2)+20*(TARGET=3)
V=SGN(PT):X=500+V*10
FOR I=V TO PT STEP V
  S=S+V*10:LOCATE 1,1:PRINT PTAB(80);S
  SOUND X,1,10:X=X+V*10
NEXT I
GOTO START
ENDGAME:
CLS:SOUND 200,20,10
PRINT "Sorry, you missed!":PRINT
PRINT "Your score:";S
PRINT "High score:";HS
IF S<=HS THEN PLAYAGAIN
HS=S:PRINT "Congratulations!"
PRINT "You beat the high score!":PRINT
PLAYAGAIN:
PRINT:PRINT "Press <RETURN> to play again."
WHILE INKEY$<>CHR$(13)
WEND
S=0:GOTO DRAWMAINSCREEN
DISTRIBUTION:
N=INT(RND*8)
Q=-(N=2 OR N=3)+2*(N=4)+3*(N>4)
RETURN

```

```

10 CLEAR 500
20 DIM D$(8)
30 HS=0:S=0:SPS=CHR$(32):CS=CHR$(191)
40 FOR I=2 TO 31:CS=CS+CHR$(191):NEXT I
50 FOR I=1 TO 8:READ D$(I):NEXT I
60 CLS:PRINT "SCORE: 0      HIGH SCORE: ";HS
70 PRINT CS:FOR I=1 TO 11
80 PRINT CHR$(191);TAB(30);CHR$(191):NEXT I:PRINT CS
90 PRINT "POINTS:  +=100 *=250 $=500 /=-100";
100 J=15:FOR I=62 TO 384 STEP 64
110 PRINT@I-J,LEFT$(CS,J);
120 J=J-1-2*(I>=254):NEXT I
130 FOR I=92 TO 412 STEP 64
140 PRINT@I,D$(RND(8));:NEXT I
150 F=32:D=RND(10)*32+36
160 PRINT@D,CHR$(191);
170 K$=INKEY$:IF K$=SPS THEN 210

```

```

10 CLEAR 500
20 DIM D$(8),L0(4),CH(4)
30 HS=0:S=0:SB=15360:SP$=CHR$(32)
40 FOR I=1 TO 8:READ D$(I):NEXT I
50 FOR I=1 TO 4:READ L0(I),CH(I):NEXT I
60 CLS
70 PRINT TAB(5);"SCORE: 0";TAB(30);"HIGH SCORE:";HS
80 PRINT STRING$(63,191):FOR I=128 TO 768 STEP 64
90 PRINT@I,CHR$(191):PRINT@I+62,CHR$(191)
100 NEXT I:PRINT STRING$(63,191)
110 PRINT TAB(6);"POINTS:          +=100          *=250          $=5
120 /=-100"
120 FOR I=1 TO 4:PRINT@L0(I),CHR$(CH(I));:NEXT I
130 J=20:FOR I=255 TO 767 STEP 128
140 PRINT@I-J,STRING$(J,191);
150 J=J-3-6*(I>=511):NEXT I
160 FOR I=189 TO 829 STEP 128
170 PRINT@I,D$(RND(8));:NEXT I
180 F=64:D=RND(9)*64+133
190 PRINT@D,CHR$(191);
200 K$=INKEY$:IF K$=SP$ THEN 260
210 L=RND(11)+1:IF L/2<>INT(L/2) THEN 230
220 PRINT@61+L*64,D$(RND(8));
230 PRINT@D,SP$;
240 D=D+F:IF D=133 OR D=773 THEN F=-F
250 GOTO 190
260 PRINT@D,SP$;D=D+1:P=PEEK(SB+D)
270 IF P=32 THEN PRINT@D,CHR$(191);:GOTO 260
280 IF P=191 THEN 330
290 P$=CHR$(P)
300 PT=50+25*(P$="*")+40*(P$="+")+60*(P$="/")
310 V=SGN(PT):FOR I=V TO PT STEP V
320 S=S+10*V:PRINT@11,S;SP$;:NEXT I:GOTO 180
330 CLS:PRINT "SORRY, YOU MISSED!"
340 PRINT:PRINT "YOUR SCORE:";S
350 PRINT:PRINT "HIGH SCORE:";HS
360 IF S<=HS THEN 390
370 HS=S:PRINT:PRINT "CONGRATULATIONS!"
380 PRINT:PRINT "YOU BEAT THE HIGH SCORE!"
390 PRINT:PRINT "PRESS <ENTER> TO PLAY AGAIN."
400 K$=INKEY$:IF K$<>CHR$(13) THEN 400
410 S=0:GOTO 60
1000 DATA +,+,*,*,$,$,/,,/
1010 DATA 64,190,126,189,832,175,894,159

```


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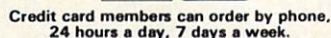
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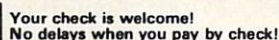
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HOME INFORMATION MANAGER

Put Your Files on a Floppy Disk with This Mini-Data-Base Program for the Apple

PROGRAM BY STEVEN C.M. CHEN

INTRODUCTION BY LANCE PAAVOLA

Since publishing the Commodore 64 version of Home Information Manager in the August issue of FAMILY COMPUTING, we've been besieged with requests from readers for translations for other computers. So, this month, we're presenting an Apple version of the program. An IBM version will appear in a future issue.

COMMODORE 64 OWNERS: Be sure to check Programming P.S. this month (page 65) for some corrections you might want to make to the C 64 version.

Home Information Manager is an electronic filing program that helps you gather files onto a slim, neat, portable disk, and print out a hard copy whenever you want. Try it if you're not ready to buy a commercial data-base program yet. Maybe you're unsure whether storing your records electronically makes sense, or all you think you'll want to computerize is your 100-name Christmas card list. It may take awhile to type in, but when you're finished, it's a program you can use every day. You can pinpoint a particular piece of information without having to thumb through it all. You can make changes without mess. And you can consolidate your files in one place.

THE FIRST STEPS

Begin by carefully typing in and SAVEing the program. (See *Tips to the Typist*, page 56, for help with typing in programs.) You may also wish to SAVE a second (backup) copy of

the program on a separate disk at this time. Before you RUN the program, make sure your printer (if you have one) is connected and turned on.

Don't be discouraged if the program doesn't RUN the first time; with such a long program, you're bound to make typing errors. LIST it on the printer and proofread carefully. When you've got the program running, SAVE the final version and make a backup.

You can save your own data on the same disk as your working copy of Home Information Manager. If you prefer to keep your data on separate disks, get the disks now, format them, and label appropriately (e.g., MOM, DAD, JODY; or FINANCIAL, PERSONAL).

Before you transfer important records to your Home Information Manager disks, test the program by creating a few sample fileboxes and filling in some info. When you're confident you've located any remaining typing errors, and have a good idea of how the program operates, you're ready to start using it in earnest.

A COMPUTERIZED FILEBOX

To make Home Information Manager easy to learn, we've designed it to work just like a recipe box filled with index cards. You can have as many "fileboxes" as will fit on your disks.

Since you'll usually put different kinds of information on each line of every index card, you should as-

sign a name to each line to remind you of what goes where. For example, for a catalog of your books (or books you've borrowed or lent), you might label the first line AUTHOR; the second, TITLE; the third, PUBLISHER; the fourth, DATE; the fifth, SUBJECT for general subject area; and the sixth, LOCATION for where it's shelved or who borrowed it.

Once you've typed in information about your books (choice two on the menu), you can print out a catalog of your library (choice four); add new books as you acquire them (choice two) and remove ones you've disposed of (choice three); change any entry (e.g., change the LOCATION of a book from DEN to BEDROOM—choice three again); or display or print out the information about a particular book or all the books on a given subject (also choice three).

Choice six lets you store the filebox you're working on (all cards and the card format) on disk; bring a new one into memory from disk; and remove (erase) a filebox. Choice five displays the names of all the fileboxes (and other files) you've saved on the disk.

EASY TO USE

For the most part, it will be obvious how to use the program, and you'll quickly learn how to use even the more obscure features (with a little experimentation). Here are some general principles:

1. **When to Press RETURN.** When you see a

menu and the SELECTION → prompt, or when you're asked for a line number, just press the number key for the option or line you want. You'll go directly there without having to press RETURN. But whenever you're asked to type in something longer than one character—a card number, say, or a line name—the program waits for you to press RETURN to indicate you're done.

2. **Moving Back Up Through the Menus.** If you ever get lost in the program, decide you don't want the choice you just made after all, or have finished with an option, you can always press the ESC key. This will take you to the previous menu at any time (except when you're reading from, or writing onto, a disk), even when you're in the middle of typing in a line.

3. **Built-in Editor.** When you see a less-than sign (<) and a blinking cursor, you are using the built-in editor subprogram. You can then type in and edit a line of text. It will let you make changes in the line until you press RETURN.

You are always in "insert mode"; that is, any character you type will be inserted in the line at the cursor's position. The left and right cursor keys move the cursor within the line; the DELETE key deletes the character under the cursor. Apple II plus computers don't have a DELETE key. You have to use CTRL-D instead (hold down the CONTROL key and press D).

A FEW HINTS

Remembering these few key points will make using the program easier:

1. When designing a card format, make sure you allow space for all the lines you might need (up to a maximum of nine). Once you start adding cards to the filebox, you can't add or delete lines without losing all the cards in memory. (You can change the names of existing lines, though.)

2. Since there's no SORT function to rearrange your cards in alphabetic or numeric order, you should type in your information in the order you want it to appear. You can add a card in the middle, but you have to wait for the computer to shift all the other cards back.

3. When you choose DISPLAY/CHANGE/REMOVE or PRINT and then WORK WITH (or PRINT) SELECTED CARDS, you're given two choices. MATCH FROM BEGINNING OF LINE checks to see if a line begins with the characters

you've specified. SEARCH WHOLE LINE looks for those characters *everywhere* within a line, but takes much longer. For example, if you tell the program to look for SMITH, SEARCH WHOLE LINE would find both SMITH, JOE and JOE SMITH; MATCH FROM BEGINNING OF LINE would find only SMITH. JOE.

Bear in mind that the program considers upper-case and lowercase letters to be different, so a search for SMITH would not find "Smith" or "smith."

4. When you PRINT a card or cards, they'll be printed with a predefined format (left margin and number of lines skipped between cards). You can change this predefined format by choosing CHANGE PRINTER OPTIONS from the PRINT CARD(S) menu.

5. The number of cards you can add to a filebox is determined by the number of lines in your card format. When you ADD CARD(S), you'll see how many cards you've used and how many

more will fit in your current filebox.

6. Remember to back up your disks frequently—certainly after every session in which you enter a lot of information. If you have a printer, it's a good idea to make a printout of everything in your fileboxes occasionally. To be absolutely safe, you can print out each new index card as you add it, then throw out your accumulated hard copies when you do a master printout of the entire file (or when you back up the disk).

MOVING ON

Home Information Manager is powerful, but if you use it often you may find yourself bumping up against some of its limitations:

- You can't do complex multiple searches (e.g., find all the recipes that call for both ham and broccoli, but not cheese; or all the people who sent you Christmas cards for two of the last three years).

- You can only fit so much onto one index card.

- Once you've set up a card format, you can't add more lines or delete existing ones without losing all the information you've typed in.

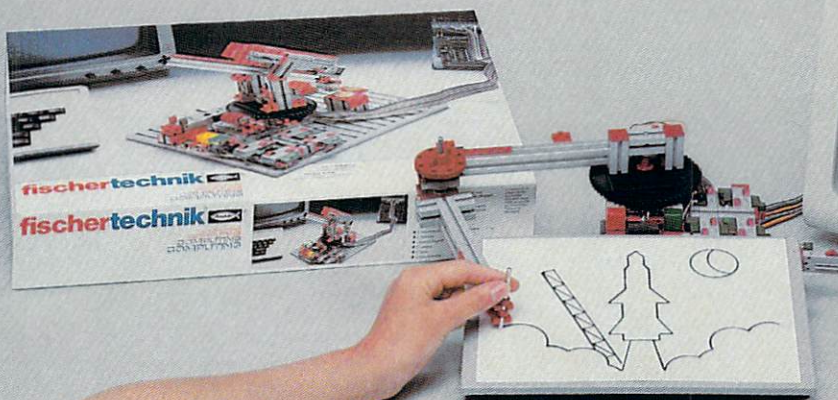
- Filebox size is limited by how much info will fit into memory at once, rather than by the storage capacity of your disk.

- The program won't sort your cards alphabetically or numerically.

- The input and printing options are fairly elementary.

If, after using *Home Information Manager*, you discover you need some of these more advanced features, watch future issues of *FAMILY COMPUTING* for a look at commercial database management programs. To better understand how they work, keep in mind that what we call "fileboxes," commercial programs term "files." They also refer to index cards as "records," and "lines" as "fields." →

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FEATURE PROGRAM

Apple II series w/48K RAM, disk drive (printer optional), & DOS 3.3*/Home Information Manager

*See modification for ProDOS below.

```

10 DIM DMS(2),FS(9),MS(7),MI(8),SMS(18),YS(2700),YNS(1),ZS(9)
20 DS = CHR$(4):ES = CHR$(27):GS = CHR$(7)
30 RES = CHR$(13):SPS = CHR$(32):FT = 0:RT = 0
40 YNS(0) = "N":YNS(1) = "Y":LM = 1:SP = 1:PF = 0
50 HF = 1:FOR I = 1 TO 7:READ MS(I):NEXT I
60 MI(0) = 1:FOR I = 1 TO 7:READ T:MI(I+1) = MI(I)+T
70 FOR J = MI(1) TO MI(I+1)-1:READ SMS(J):NEXT J,I
80 FOR I = 0 TO 2:READ DMS(I):NEXT I
90 BL$ = SPS:LS = SPS:FOR I = 1 TO 38:BL$ = BL$+SPS
100 L$ = LS+CHR$(61):NEXT I:TEXT:HOME
110 GOSUB 2400:VTAB 1:HTAB 1:PRINT L$:PRINT RES;LS
120 POKE 34,3:POKE 35,22
130 HOME
140 RS$ = "HOME INFORMATION MANAGER":GOSUB 2720
150 PRINT:FOR I = 1 TO 6
160 PRINT TAB(5);"<";I;"> ";MS(I);RES:NEXT I
170 PRINT:PRINT TAB(9);"SELECTION -->";
180 AS$ = "6":GOSUB 2300:MS = VAL(K$)
190 IF K$ = ES THEN MS = 7
200 IF (MS <> 3 AND MS <> 4) OR RT > 0 THEN 230
210 GOSUB 2700:PRINT "NO CARDS PRESENT."
220 GOSUB 2100:GOTO 130
230 ON MS GOTO 240,560,900,1020,1340,1390,1890
240 FL = 29:GOSUB 3000:IF K$ = ES THEN 130
250 AS$ = STR$(FT):IF SE > 2 OR RT < 1 THEN 270
260 GOSUB 2710:GOSUB 2500:ON K$ = ES GOTO 240:RT = 0
270 IF FT = 0 AND SE > 1 THEN 440
280 ON SE GOTO 290,370,460,530
290 GOSUB 3100:IF FT < 9 THEN 320
300 PRINT "A CARD HAS ONLY 9 LINES!"
310 GOSUB 2100:GOTO 240
320 FT = FT+1:C = FT
330 HS$ = "LINE "+STR$(C)+"":TS$ = ""
340 GOSUB 6000:IF K$ = ES THEN FT = FT-1:GOTO 540
350 FS(FT) = TS$:IF FT < 9 THEN 290
360 GOSUB 3100:GOTO 310
370 GOSUB 3100:IF FT < 1 THEN 450
380 AS$ = STR$(FT)
390 PRINT "WHICH LINE DO YOU WANT TO DELETE? ";
400 GOSUB 2300:IF K$ = ES THEN 540
410 C = VAL(K$):IF C = FT THEN 430
420 FOR I = C TO FT-1:FS(I) = FS(I+1):NEXT I
430 FT = FT-1:IF FT > 0 THEN 370
440 GOSUB 2710
450 PRINT "NO LINES PRESENT.":GOSUB 2100:GOTO 540
460 GOSUB 3100
470 PRINT "CHANGE THE NAME OF WHICH LINE #? ";
480 GOSUB 2300:IF K$ = ES THEN 240
490 PRINT K$:C = VAL(K$)
500 HS$ = "LINE "+STR$(C)+"":TS$ = FS(C)
510 GOSUB 6000:IF K$ = ES THEN 460
520 FS(C) = TS$:GOTO 460
530 GOSUB 3100:GOTO 240
540 MAX = 0:IF FT > 0 THEN MAX = INT(2700/FT)
550 GOTO 240
560 WS$ = ES:IF FT > 0 THEN 590
570 GOSUB 2700:PRINT "YOU MUST ";MS(1);" (OPTION 1"
580 PRINT "ON MAIN MENU) FIRST.":GOSUB 2100:GOTO 130
590 IF RT = MAX THEN GOSUB 2700:GOTO 650
600 GOSUB 3000:IF K$ = ES THEN 130
610 GOSUB 2710:FL = 38:IF SE = 2 THEN 760
620 GOSUB 2600
630 RT = RT+1:IF RT < MAX+1 THEN 660
640 RT = MAX
650 PRINT GS;DMS(2):GOSUB 2100:GOTO 130
660 VTAB 4:HTAB 15:PRINT "CARD ";RT
670 C = RT:FOR L = 1 TO FT:GOSUB 3200
680 IF K$ <> ES THEN YS(T) = TS$:GOTO 700
690 L = FT:RT = RT-1
700 NEXT L:IF K$ = ES THEN 600
710 PRINT LS:PRINT DMS(0)
720 VTAB 20:PRINT "CARDS USED: ";RT
730 VTAB 21:PRINT "CARDS LEFT: ";MAX-RT;SPS;
740 GOSUB 2200:ON K$ = SPS GOTO 620:GOTO 130
750 GOSUB 2710:IF RT = MAX THEN 650
760 HS$ = "INSERT BEFORE WHICH CARD #?":TS$ = ""
770 FL = 39:GOSUB 6000:IF K$ = ES THEN 600
780 GOSUB 2710
790 C = VAL(TS$):IF C > 0 AND C < RT+1 THEN 810
800 PRINT GS;DMS(1):GOSUB 2100:GOTO 590
810 PRINT TAB(13);"NEW CARD ";C
820 FOR L = 1 TO FT:GOSUB 3200
830 IF K$ = ES THEN L = FT:GOTO 850
840 ZS(L) = TS$
850 NEXT L:IF K$ = ES THEN 600
860 FOR J = RT+FT TO (C-1)*FT+1 STEP -1
870 YS(J+FT) = YS(J):NEXT J:RT = RT+1
880 FOR J = 1 TO FT:YS((C-1)*FT+J) = ZS(J):NEXT J
890 GOTO 750
900 F = -1
910 GOSUB 3000:IF K$ = ES THEN 130
920 GOSUB 2710:IF SE = 2 THEN 1010
930 HS$ = "START WITH WHICH CARD?":TS$ = "":FL = 32
940 GOSUB 6000:IF K$ = ES THEN 910
950 V = VAL(TS$):IF V > 0 AND V < RT+1 THEN 970
960 PRINT LS:PRINT GS;DMS(1):GOSUB 2100:GOTO 910
970 GOSUB 3900:J = V
980 WS$ = "":GOSUB 4000:IF WS$ = ES THEN 910
990 J = J+1:IF J < RT+1 THEN 980
1000 HOME:PRINT GS;DMS(2):GOSUB 2100:GOTO 910
1010 GOSUB 5000:GOTO 910
1020 RA$ = " (1-"+STR$(RT)+"?)?"
1030 FL = 6:GOSUB 3000:IF K$ = ES THEN 130
1040 GOSUB 2710:ON SE GOTO 1050,1080,1130,1140,1150
1050 PRINT "PRINT WHICH CARD #";RA$
1060 GOSUB 3700:IF RF THEN 1030
1070 R1 = T:R2 = T:GOSUB 3800:GOTO 1020
1080 PRINT "START WITH WHICH CARD #";RA$
1090 GOSUB 3700:R1 = T:IF RF THEN 1030
1100 PRINT "STOP WITH WHICH CARD #";RA$
1110 GOSUB 3700:R2 = T:IF (RF) OR R2 < R1 THEN 1030
1120 GOSUB 3800:GOTO 1020
1130 R1 = 1:R2 = RT:GOSUB 3800:GOTO 1020
1140 GOSUB 5000:GOTO 1020
1150 FL = 37:HS$ = "LEFT MARGIN (0-40):"
1160 TS$ = STR$(LM)
1170 GOSUB 6000:IF K$ = ES THEN 1020
1180 LM = VAL(TS$):IF LM > -1 AND LM < 41 THEN 1210
1190 LM = 1:VTAB 4:PRINT BL$
1200 VTAB 4:HTAB 1:GOTO 1160
1210 HS$ = "BLANK LINES BETWEEN CARDS (0-66):"
1220 TS$ = STR$(SP)
1230 GOSUB 6000:IF K$ = ES THEN 1020
1240 SP = VAL(TS$):IF SP > -1 AND SP < 67 THEN 1270
1250 SP = 0:VTAB 5:PRINT BL$
1260 VTAB 5:HTAB 1:GOTO 1220
1270 HS$ = "PAUSE AFTER EACH CARD (Y/N)":TS$ = YNS(PF)
1280 GOSUB 6000:IF K$ = ES THEN 1020
1290 PF = (LEFT$(TS$,1) = "Y")
1300 HS$ = "PRINT LINE NAMES (Y/N)":TS$ = YNS(HF)
1310 GOSUB 6000:IF K$ = ES THEN 1020
1320 HF = (LEFT$(TS$,1) = "Y")
1330 PRINT LS:GOSUB 2100:GOTO 1020
1340 GOSUB 2700:ONERR GOTO 1370
1350 POKE 35,24:HOME
1360 PRINT:PRINT DS;"CATALOG,D1"
1370 PRINT LS:GOSUB 2400:GOSUB 2100
1380 POKE 35,22:POKE 216,0:GOTO 130
1390 FL = 35
1400 GOSUB 3000:IF K$ = ES THEN 130
1410 GOSUB 2710
1420 IF SE <> 2 OR RT < 1 THEN 1440
1430 GOSUB 2500:HOME:IF K$ = ES THEN 1400
1440 TS$ = "":IF SE = 1 THEN HS$ = "STORE UNDER WHAT NAME?"
1450 IF SE = 2 THEN HS$ = "GET WHICH FILEBOX?"
1460 IF SE = 3 THEN HS$ = "REMOVE WHICH FILEBOX?"
1470 GOSUB 6000:IF TS$ = "" OR K$ = ES THEN 1400
1480 IF VAL(TS$) <> 0 OR ASC(TS$) = 48 THEN 1400
1490 TS$ = TS$+".HIM":POKE 35,24:HOME:ONERR GOTO 1510

```



```

1500 ON SE GOTO 1640,1790,1620
1510 ER = PEEK(222)
1520 HOME
1530 PRINT D$;"CLOSE ";T$:PRINT G$;
1540 IF ER = 5 THEN PRINT "FILE INCOMPLETE. ";INT(J/FT
);" OF ";RT;" CARDS READ.";GOTO 1860
1550 IF ER = 4 THEN PRINT "DISK IS WRITE PROTECTED."
1560 IF ER = 6 THEN PRINT "THAT FILEBOX IS NOT ON THIS
DISK."
1570 IF ER = 8 OR ER = 9 OR ER = 11 THEN PRINT "DISK E
RROR."
1580 IF ER = 9 THEN PRINT "SORRY, THIS DISK IS FULL.
TRY ANOTHER."
1590 IF ER = 13 THEN PRINT "THAT IS NOT A FILEBOX FILE
."
1600 PRINT L$:GOSUB 2400:GOSUB 2100
1610 POKE 35,22:POKE 216,0:GOTO 1400
1620 PRINT D$;"DELETE ";T$
1630 GOSUB 2400:GOTO 1610
1640 ONERR GOTO 1710
1650 PRINT D$;"LOCK ";T$
1660 PRINT D$;"UNLOCK ";T$
1670 PRINT G$;"THAT FILEBOX IS ALREADY ON THIS DISK."
1680 PRINT "PRESS <SPACE BAR> TO REPLACE IT."
1690 GOSUB 2400:GOSUB 2200:IF K$ = E$ THEN 1610
1700 POKE 35,24:HOME:PRINT:PRINT D$;"DELETE ";T$
1710 PRINT D$;"OPEN ";T$
1720 PRINT D$;"WRITE ";T$
1730 PRINT "FILEBOX":PRINT FT:PRINT RT
1740 PRINT LM:PRINT SP:PRINT PF:PRINT HF
1750 FOR J = 1 TO FT:PRINT CHR$(34);F$(J);CHR$(34)
1760 NEXT J:IF RT = 0 THEN 1780
1770 FOR J = 1 TO RT*FT:PRINT CHR$(34);Y$(J);CHR$(34):
NEXT J
1780 PRINT D$;"CLOSE ";T$:GOSUB 2400:GOTO 1610
1790 PRINT D$;"UNLOCK ";T$
1800 PRINT D$;"OPEN ";T$
1810 PRINT D$;"READ ";T$
1820 INPUT C$:IF C$ <> "FILEBOX" THEN ER = 13:GOTO 153
0
1830 INPUT FT:INPUT RT:INPUT LM:INPUT SP:INPUT PF:INPU
T HF
1840 FOR J = 1 TO FT:INPUT F$(J):NEXT J:IF RT = 0 THEN
1860
1850 FOR J = 1 TO RT*FT:INPUT Y$(J):NEXT J
1860 MAX = 0:IF FT > 0 THEN MAX = INT(2700/FT)
1870 PRINT D$;"CLOSE ";T$
1880 PRINT "FILEBOX IS NOW IN MEMORY.":GOTO 1600
1890 GOSUB 3000:IF SE = 1 OR K$ = E$ THEN 130
1900 TEXT:HOME:END
2000 POKE -16368,0
2010 K = PEEK(-16384):IF K < 128 THEN 2010
2020 K$ = CHR$(K-128):POKE -16368,0:RETURN
2100 GOSUB 2000:ON K$ <> E$ GOTO 2100:RETURN
2200 GOSUB 2000:IF K$ <> E$ AND K$ <> SP$ THEN 2200
2210 RETURN
2300 GET K$
2310 IF K$ <> E$ AND (K$ < "1" OR K$ > A$) THEN 2300
2320 RETURN
2400 VTAB 23:HTAB 1:PRINT L$
2410 VTAB 24:HTAB 11:PRINT "PRESS <ESC> TO EXIT.";
2420 RETURN
2500 PRINT "WARNING! USE OF THIS OPTION WILL ERASE"
2510 PRINT "CONTENTS OF ALL CARDS FROM MEMORY."
2520 PRINT:PRINT D$(0):GOSUB 2200:RETURN
2600 POKE 35,18:HOME:POKE 35,22:RETURN
2700 HOME:R$ = M$(MS):GOTO 2720
2710 HOME:R$ = S$(MI(MS)+SE-1):GOTO 2720
2720 VTAB 2:HTAB 1:PRINT BL$:VTAB 2:HTAB 1
2730 PRINT SPC((40-LEN(R$))/2);R$:VTAB 4:RETURN
3000 GOSUB 2700:PRINT:FOR I = MI(MS) TO MI(MS+1)-1
3010 PRINT TAB(6);"<";I-MI(MS)+1;"> ";S$(I)
3020 PRINT:NEXT I:A$ = STR$(MI(MS+1)-MI(MS))
3030 PRINT:PRINT TAB(10);"SELECTION -->";
3040 GOSUB 2300:SE = VAL(K$):RETURN
3100 GOSUB 2710:IF FT < 1 THEN RETURN
3110 FOR I = 1 TO FT

```

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CIRCLE READER SERVICE 34

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12A

CIRCLE READER SERVICE 17

FEATURE PROGRAM

```

3120 PRINT "LINE ";I;": ";F$(I):NEXT I
3130 PRINT L$:IF MS = 3 OR MS = 4 THEN RETURN
3140 IF SE = 4 THEN GOSUB 2100
3150 RETURN
3200 T = (C-1)*FT+L:H$ = F$(L)+":":T$ = ""
3210 IF W$ = "C" THEN T$ = Y$(T)
3220 GOSUB 6000:RETURN
3300 W$ = "":PRINT TAB(LM+15);"CARD ";J
3310 FOR Z = 1 TO FT:T$ = "":IF HF THEN T$ = F$(Z)+":
"
3320 PRINT TAB(LM);T$:Y$((J-1)*FT+Z)
3330 W$ = CHR$(PEEK(-16384)):IF W$ = E$ THEN Z = FT:J
= R2
3340 NEXT Z:IF W$ = E$ THEN RETURN
3350 IF SP = 0 THEN 3370
3360 FOR Z = 1 TO SP:PRINT:NEXT Z
3370 GOSUB 2600:IF PF = 0 THEN RETURN
3380 PRINT D$;"PR# 0":PRINT DMS(0):GOSUB 2200
3390 PRINT:PRINT D$;"PR# 1":IF K$ = SP$ THEN RETURN
3400 J = R2:RETURN
3500 PRINT TAB(15);"CARD ";J:PRINT L$
3510 FOR Z = 1 TO FT:PRINT F$(Z);":":Y$((J-1)*FT+Z)
3520 NEXT Z:PRINT L$:RETURN
3600 PRINT "PRESS <SPACE BAR> WHEN PRINTER IS READY."
3610 GOSUB 2200:RETURN
3700 RF = 1:H$ = "":T$ = "":GOSUB 6000:PRINT L$
3710 IF K$ = E$ OR T$ = "" THEN RETURN
3720 T = VAL(T$):IF T > 0 AND T <= RT THEN RF = 0:RETU
RN
3730 PRINT G$:DMS(1):PRINT L$
3740 GOSUB 2100:RETURN
3800 GOSUB 3600:IF K$ = E$ THEN RETURN
3810 PRINT:PRINT D$;"PR# 1"
3820 FOR J = R1 TO R2:GOSUB 3300
3830 NEXT J:PRINT D$;"PR# 0":RETURN
3900 VTAB 19:HTAB 1
3910 PRINT "PRESS <C> TO CHANGE THIS CARD,"
3920 PRINT "PRESS <X> TO PRINT IT,"
3930 PRINT "PRESS <R> TO REMOVE IT, OR"
3940 PRINT "PRESS <SPACE BAR> TO MOVE TO NEXT CARD.":;
RETURN
4000 GOSUB 2600:GOSUB 3500
4010 GOSUB 2000:IF K$ = E$ THEN W$ = E$:J = RT:RETURN
4020 IF K$ = SP$ THEN RETURN
4030 ON K$ = "C" GOTO 4110:IF K$ = "R" THEN 4170
4040 IF K$ <> "P" THEN 4010
4050 HOME
4060 IF F THEN GOSUB 3600:IF K$ = E$ THEN 4100
4070 F = 0:PRINT "NOW PRINTING CARD ";J
4080 PRINT:PRINT D$;"PR# 1"
4090 GOSUB 3300:PRINT D$;"PR# 0"
4100 J = J-1:GOSUB 3900:RETURN
4110 HOME:GOSUB 2710
4120 FL = 39:PRINT TAB(15);"CARD ";J
4130 C = J:W$ = "C":FOR L = 1 TO FT:GOSUB 3200
4140 IF K$ = E$ THEN L = FT:GOTO 4160
4150 Y$(T) = T$
4160 NEXT L:J = J-1:GOSUB 3900:RETURN
4170 HOME:GOSUB 3500
4180 PRINT "PRESS <SPACE BAR> TO REMOVE THIS CARD."
4190 GOSUB 2200:GOSUB 3900:IF K$ = E$ THEN J = J-1:RET
URN
4200 IF J = RT THEN 4230
4210 FOR Z = (J-1)*FT+1 TO (RT-1)*FT
4220 Y$(Z) = Y$(Z+FT):NEXT Z
4230 RT = RT-1:J = J-1:RETURN
5000 GOSUB 3110:A$ = STR$(FT)
5010 W$ = "":PRINT "SELECT CARDS BY WHICH LINE #?";
5020 GOSUB 2300:IF K$ = E$ THEN RETURN
5030 V = VAL(K$):GOSUB 2600
5040 PRINT "WHAT TEXT ARE YOU SEARCHING FOR?"
5050 FL = 38:H$ = "":T$ = "":GOSUB 6000
5060 IF K$ = E$ OR T$ = "" THEN RETURN
5070 HOME:PRINT
5080 PRINT TAB(5);"<1> MATCH FROM BEGINNING OF LINE"
5090 PRINT RES;TAB(5);"<2> SEARCH WHOLE LINE":PRINT

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```

5100 A$ = "2":PRINT TAB(9);"SELECTION -->";
5110 GOSUB 2300:IF K$ = E$ THEN RETURN
5120 SF = 0:SR$ = T$:LS = LEN(SR$)
5130 J = 1:IF K$ = "2" THEN 5220
5140 HOME
5150 PRINT TAB(10);"CHECKING CARD ";J
5160 IF SR$ <> LEFT$(Y$((J-1)*FT+V),LS) THEN 5180
5170 SF = 1:W$ = "":GOSUB 3900:GOSUB 4000:HOME
5180 POKE -16368,0:X$ = CHR$(PEEK(-16384))
5190 IF W$ = E$ OR X$ = E$ THEN RETURN
5200 J = J+1:IF J <= RT THEN 5140
5210 GOTO 5330
5220 Z$ = Y$((J-1)*FT+V):LZ = LEN(Z$)
5230 HOME:PRINT TAB(10);"CHECKING CARD ";J
5240 IF Z$ = "" OR LZ < LS THEN 5320
5250 FOR W = 1 TO LZ-LS+1
5260 IF SR$ <> MID$(Z$,W,LS) THEN 5280
5270 W = 256:SF = 1:W$ = "":GOSUB 3900:GOSUB 4000:HOME
5280 POKE -16368,0:X$ = CHR$(PEEK(-16384))
5290 IF W$ = E$ OR X$ = E$ THEN W = 300
5300 NEXT W
5310 IF W$ = E$ OR (X$ = E$ AND K$ <> E$) THEN RETURN
5320 J = J+1:IF J < RT+1 THEN 5220
5330 HOME:IF SF < 1 THEN 5350
5340 PRINT "NO MORE CARDS MATCH!":GOSUB 2100:RETURN
5350 PRINT "NO CARDS MATCH!":GOSUB 2100:RETURN
6000 PRINT H$:XL = PEEK(36):YL = PEEK(37)+1
6010 PC = 2:T$ = SP$+T$
6020 VTAB YL:HTAB XL+1:PRINT T$;"<";SP$
6030 VTAB YL:HTAB XL+PC
6040 GET K$:K = ASC(K$):IF K = 127 THEN K = 4
6050 IF K > 31 THEN 6120
6060 ER = (K = 13)+(K = 27):IF ER THEN 6150
6070 CU = (K = 21)-(K = 8):IF K = 4 THEN 6110
6080 IF CU = 0 THEN 6030
6090 PC = PC+CU:PC = PC+(PC < 2)-(PC > LEN(T$)+1)
6100 GOTO 6030
6110 T$ = LEFT$(T$,PC-1)+MID$(T$,PC+1,LEN(T$)):GOTO 60
20
6120 IF LEN(T$) > FL-XL-1 THEN 6040
6130 T$ = LEFT$(T$,PC-1)+K$+MID$(T$,PC,LEN(T$))
6140 PC = PC+1:GOTO 6020
6150 T$ = MID$(T$,2,FL)
6160 VTAB YL:HTAB XL+2:PRINT T$;SP$:VTAB YL+1
6170 RETURN
7000 DATA DESIGN CARD FORMAT,ADD CARD(S)
7010 DATA DISPLAY/CHANGE/REMOVE CARD(S),PRINT CARD(S)
7020 DATA LIST ALL FILES ON DISK
7030 DATA GET NEW/STORE/REMOVE FILEBOX,QUIT
7040 DATA 4,ADD NEW LINES,DELETE LINES
7050 DATA CHANGE NAMES OF LINES,DISPLAY CARD FORMAT
7060 DATA 2,ADD AT END,INSERT BEFORE END
7070 DATA 2,LOOK AT CARDS CONSECUTIVELY
7080 DATA WORK WITH SELECTED CARD(S)
7090 DATA 5,PRINT ONE CARD,PRINT A RANGE OF CARDS
7100 DATA PRINT ALL CARDS,PRINT SELECTED CARD(S)
7110 DATA CHANGE PRINTER OPTIONS,1,DISK
7120 DATA 3,STORE THIS FILEBOX ON DISK
7130 DATA GET A FILEBOX FROM DISK
7140 DATA REMOVE A FILE FROM DISK
7150 DATA 2,RETURN TO MAIN MENU,QUIT
8000 DATA "PRESS <SPACE BAR> TO CONTINUE."
8010 DATA NO SUCH CARD!,NO MORE CARDS!

```

MODIFICATION FOR PRODOS

Apple II series w/64K RAM, disk drive (printer optional), & ProDOS/Home Information Manager

Use the DOS 3.3 version, except change line 1360 to read as follows:

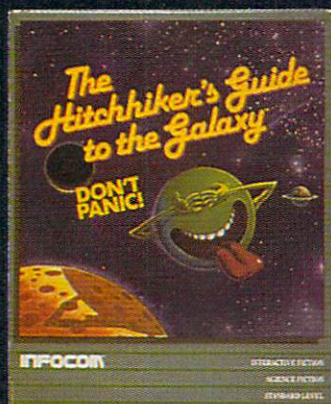
```
1360 PRINT:PRINT D$;"CAT,D1"
```


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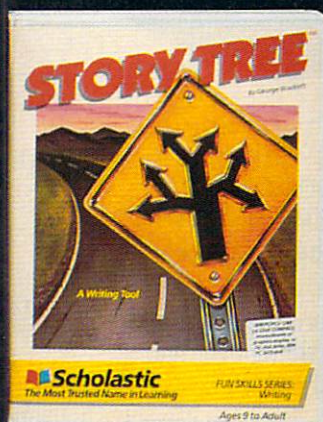
Infocom



Harcourt Brace Jovanovich



DesignWare



Scholastic

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Earth will be destroyed in 12 minutes to make way for a hyperspace bypass.

Should you hitchhike into the next galaxy? Or stay and drink beer?

Slip the disk in your computer and suddenly you are Arthur Dent, the dubious hero of *THE HITCHHIKER'S GUIDE TO THE GALAXY*, a side-splitting masterwork of interactive fiction by novelist Douglas Adams and Infocom's Steve Meretzky. And every decision you make will shape the story's outcome. Suppose for instance you decide to linger in the pub. You simply type, in plain English:

>DRINK THE BEER

And the story responds:

YOU GET DRUNK AND HAVE A TERRIFIC TIME FOR TWELVE MINUTES, ARE THE LIFE AND SOUL OF THE PUB, THEY ALL CLAP YOU ON THE BACK



>WRAP THE TOWEL AROUND MY HEAD

And the story responds:

THE RAVENOUS BUGBLATTER BEAST OF
TRAAAL IS COMPLETELY BEWILDERED,
IT IS SO DIM IT THINKS IF YOU CAN'T
SEE IT, IT CAN'T SEE YOU.

AND
TELL YOU
WHAT A GREAT
CHAP YOU ARE AND
THEN THE EARTH GETS
UNEXPECTEDLY DEMOLISHED. YOU
WAKE UP WITH A HANGOVER WHICH LASTS
FOR ALL ETERNITY. YOU HAVE DIED.

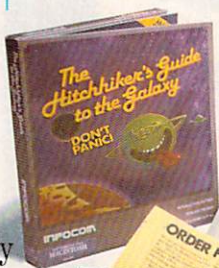
Suppose, on the other hand, you decide to:

>EXIT THE VILLAGE PUB THEN GO NORTH

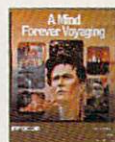
In that case you'll be off on the most mind-bogglingly hilarious adventure any earthling ever had.

You communicate—and the story responds—in full sentences. So at every turn, you have literally thousands of alternatives. If you decide it might be wise, for instance, to wrap a towel around your head, just say so:

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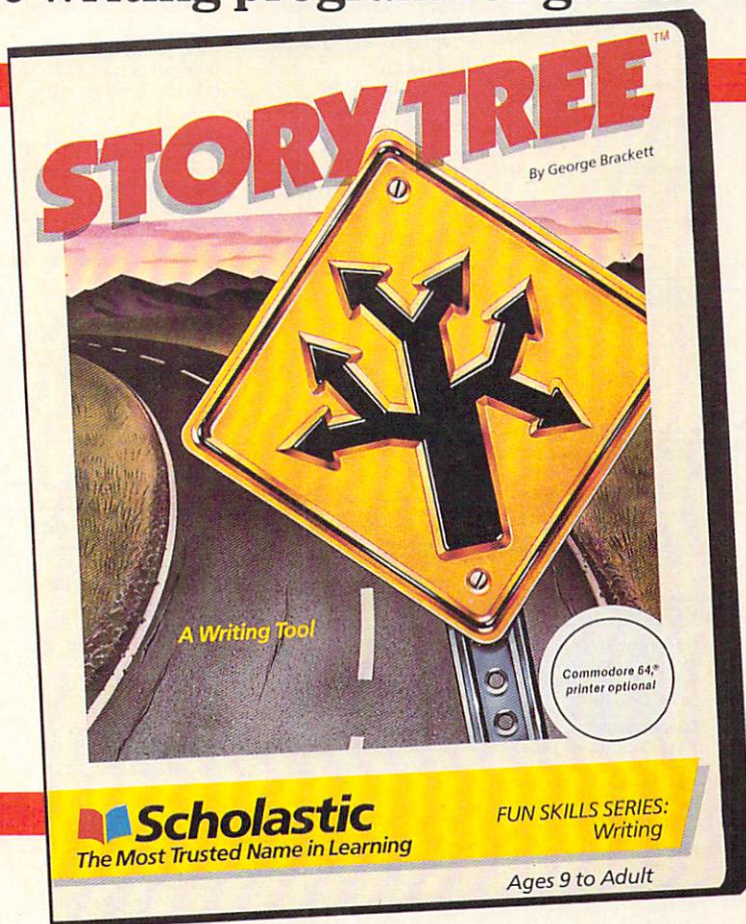
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Any student through grade 9 is eligible. Stories must be composed on Story Tree, using the program's branching feature. A panel of noted educators and authors will judge entries. Prizes will be awarded on *each* of two levels: (1) Through Grade 6; (2) Grades 7, 8, 9.

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Jacksonville, FL 32211
(904) 725-4554 (3)

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1705 University Blvd. N.
Jacksonville, FL 32211
(904) 743-7050 (1,2)

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Coral Gables, FL 33134
(305) 441-2983 (1)

Sunshine Discount Software
956 N.E. 62nd St.
Ft. Lauderdale, FL 33334
(305) 493-5047 (1,2,3,4)

GEORGIA

Cardinal Computers
903 N. Glenwood Ave.
Dalton, GA 30720
(404) 226-0502 (4)

Future Systems
2525 Washington Road
Augusta, GA 30904
(404) 737-8313 (1,2,3)

Software City
5500 Abercorn St.
Savannah, GA 31405
(912) 352-7638 (1,4)

Software City
2483 Airport Thruway
Columbus, GA 31904
(404) 327-9578 (1)

Software Forum
125 Peachtree St.
Atlanta, GA 30303
(404) 584-9833 (1,2)

HAWAII

Software Library
805 Pohukaina Street
Honolulu, HI 96813
(808) 533-1123 (2)

IDAHO

ET Computer Institute
Pocatello Mall
Pocatello, ID 83201
(208) 232-2900 (1)

Software Center Northwest
1020 Main St.
Boise, ID 83702
(208) 336-4242 (2,3)

Software Galeria
1850 East 17th St.
Idaho Falls, ID 83401
(208) 524-0891 (2)

ILLINOIS

A Byte Better
1313 Fifth Ave
Rockford, IL 61108
(815) 964-1545 (1,3,4)

Cinacore-Elliott
Computer Center
2200 36th Ave.
Moline, IL 61265
(309) 797-0137 (1,2)

Computer Tree
1022 W. Lincoln Hwy.
DeKalb, IL 60115
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Disk 'N' Tech
15148 S. Lagrange Road
Orland Park, IL 60462
(312) 460-1060 (1)

Software Centre
8219 Golf Road
Niles, IL 60648
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Software City
2304 Rano Rd.
Arlington Hts, IL 60004
(312) 259-4260 (1,2,3,4)

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6720 E. State Blvd.
Fort Wayne, IN 46809
(219) 493-6505 (4)

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9431 N. Meridian Street
Indianapolis, IN 46260
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1721 Grant St.
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Iowa Book/Supply Company
8 S. Clinton
Iowa City, IA 52240
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The Bottom Line Computers Inc.
1948 S. 291 Highway
Olathe, KS 66062
(913) 829-1600 (1,2)

Computer Centre
136 & Mur-Len
348, PO Box 4000
Olathe, KS 66062
(913) 829-3110 (3)

Computer Trend
1038 S. Oliver
Wichita, KS 67202
(316) 686-5100 (1,2)

Computer Trend
9930 College Blvd.
Overland Park, KS 66210
(913) 451-8151 (1,2)

Hitec Computer Center
1210 S. Rock Road
Wichita, KS 67207
(316) 685-1131 (1,4)

Majestic Electronics
3995 E. Harry
Wichita, KS 67218
(316) 682-7559 (1,3,4)

Software Centre/Leawood
3732 West 95th
Leawood, KS 66206
(913) 341-6711 (1,2,4)

KENTUCKY

Lexington Computer Store
2909 Richmond Road
Lexington, KY 40509
(606) 268-1431 (1,2)

LOUISIANA

Computer Shoppe, Inc.
3828 Veterans Blvd.
Metairie, LA 70002
(504) 454-6600 (1,2)

Software Mart, Inc.
3300 W. Esplanade Ave. N.
Metairie, LA 70002
(504) 836-2198 (1,3,4)

Software Solutions

Bon Marche Mall
Baton Rouge, LA 70806
(504) 928-2613 (1,2,3,4)

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Home Port Computers
129 Main St.
Waterville, ME 04901
(207) 873-2192 (1,2)

Pierre's Electronics
50 Exchange St.
Portland, ME 04101
(207) 772-8017 (1,2,3,4)

MARYLAND

The Program Store
White Flint Mall
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Kensington, MD 20895
(301) 984-1233 (1,2,4)

Rockville Sales
11807 Idlewood Rd.
Silver Springs, MD 20906
(301) 946-1564 (1,2,3,4)

MASSACHUSETTS

Arel Computer Products
1 Washington St.
Taunton, MA 02780
(617) 824-4254 (1,4)

Computer Concepts Home Centre
Store 47A Hanover Mall
Hanover, MA 02339
(617) 826-6842 (1,3,4)

Computers Etc.
216 Newbury St.
Peabody, MA 01960
(617) 535-5252 (1,2)

Computer Magic of Waltham
795 Main St.
Waltham, MA 02154
(617) 893-3626 (3,4)

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33 Beach St.
Manchester, MA 01944
(617) 526-1517 (2)

General Computer Stores
Hamilton Plaza West
680 Worcester Rd.
Framingham, MA 01701
(617) 872-2084 (1,2,3)

Instant Software
427 Great Road
Acton, MA 01720
(617) 263-0418 (2,4)

Instant Software
355 Boylston St.
Boston, MA 02116
(617) 353-1582 (2)

Instant Software
170 Worcester Road
Wellesley, MA 02181
(617) 235-6652 (1,3)

Personal Computer Resources, Inc.
45 Pond St.
Norwell, MA 02061
(617) 871-5396 (1,2)

Tech Computer Store, Inc.
19 Alewife Brook Pkwy.
Cambridge, MA 02140
(617) 497-0395 (1,2)

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Bay City, MI 48708
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106 S. McLellan St.
Bay City, MI 48706
(517) 893-9568 (1,2)

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214 W. Savidge Street
Spring Lake, MI 49456
(616) 842-1891 (1,2)

Software Carousel
4270 Plainfield N.E.
Grand Rapids, MI 49505
(616) 361-1381 (1,2,3,4)

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3971 17 Mile Road
Sterling Heights, MI 48078
(313) 978-3701 (1,2,3)

The Software Shop
4977 Livernois
Troy, MI 48098
(313) 524-1581 (2)

Software Trends
230 South Main St.
Clawson, MI 48017
(313) 288-3280 (4)

Strom Discount Computer
42189 Ann Arbor Rd.
Plymouth, MI 48170
(313) 455-8022 (1,2,3,4)

MINNESOTA

Team Electronics
Central Square Mall
Grand Rapids, MN 55744
(218) 326-6684 (1,2)

MISSISSIPPI

Computerland
4611 8th St
Meridian, MS 39305
(601) 482-8523 (1,2,3,4)

MISSOURI

The Bottom Line Computers, Inc.
800 N. 7 Highway
Blue Springs, MO 64015
(816) 228-1800 (1,2)

The Bottom Line Computers, Inc.
316 S. 291 Highway
Liberty, MO 64068
(816) 792-1500 (1,2)

The Computer Junction, Inc.
852 Country Corners
Washington, MO 63010
(314) 239-7544 (3,4)

Lifestyle Computers
Clayton Center
Ellisville, MO 63011
(314) 227-5577 (2)

Software Centre International
7748 Forsyth Blvd.
Clayton, MO 63105
(314) 863-7611 (1,2,3,4)

Software Centre/Independence
3801 S. Noland Road
Independence, MO 64055
(816) 461-3838 (1,2,4)

MONTANA

Computer People
2304 West Main
Bozeman, MT 59715
(406) 587-9544 (2)

NEBRASKA

Computer Trend
8411 W. Center
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CIRCLE READER SERVICE 3

This Month!!

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Music
Program Page 86
Dance of the Sugar-
Plum Fairy!

K-POWER

Edited by Anne Krueger

FOR THE COMPUTER GENERATION

Attention Gamers: Here Comes Accolade!

Accolade \ 'ak-ə- lād, - lād \ n
1a: a mark of acknowledgment:
AWARD **b:** an expression of praise
2 an up-and-coming software company created by Alan Miller and Bob Whitehead.

If you've played *Chopper Command* or *Robot Tank*, you're familiar with the vivid and exciting style of Alan Miller and Bob Whitehead. Alan started programming games at Atari and soon joined Bob Whitehead (and others) to form Activision. Moving on to expand their horizons, Alan and Bob cofounded Accolade and are now designing a new generation of entertainment software. In an interview with Alan Miller, K-POWER's Special Ks discovered what Accolade has in store.

Special Ks: What kind of games will Accolade produce?

Alan Miller: For the most part, they will be graphic adventures and simulations, with elements of arcade action.

What we're basically striving for at Accolade are games with more realism. A video game should be more like a movie; a player should feel like an actor, rather than a spectator. Accolade games will have better graphics, music which will enhance the emotions felt by the player, and, most importantly, a strong emphasis will be on character development.

Special Ks: What products do you have in the works?

Miller: We have contracted some out-of-house designers to create games

under the Accolade name. Software Heaven in San Diego, California is making *Sundog 2.0*, an overall improvement on the original. Sydney Software of Ottawa, Canada, will be creating *The Dam Busters*, in which you pilot an Allied World War II bomber, attempting to blow up enemy dams.

Bob Whitehead is working on a game called *Hardball*. This is a baseball simulation that will let you view play from a variety of camera angles. It's also a "real-time" game, which means that an hour of game time is an hour of real time. The game will provide you with a list of major-league teams to use.

Mike Lorenzen is designing *The Psi-5 Trading Co.* that will place you in the captain's chair of a space freighter. You'll choose your crew from a roster of names, each having his/her own skills and personality traits. You'll have to deal with deep-space breakdowns, piracy, and even hijacking.

I'm creating *Law of the West*, a graphic adventure in which you're the marshall of a small town on the western frontier. You must interact with the various citizens and deal with any outlaws that ride your way. How you relate with people in the beginning of the game is how they'll act to you later on—so think before you act.

These games will be on sale for the Commodore 64 for \$29, and the 64K Apple II series for \$34.

Special Ks: How do you design your games . . . in teams or solo?



Accolade's *HARDBALL* simulates realistic baseball action. (Insert) Alan Miller, cofounder of Accolade.

Miller: I used to design games from top to bottom on my own, but I've found that the overall product is superior when designed by a team of specialists. For example, I'm assisted by a professional composer and a graphic artist who give the games music and graphics that are quite impressive.

Special Ks: How did you get started in designing and programming computer games? And what advice do you have for kids who are interested in programming?

Miller: After getting a degree in electrical engineering at the University of California at Berkeley, I worked for a few years in the computer industry. I got my start in software design as a programmer of Atari 2600 cartridges. I have since moved on and now make games for home computers.

My advice to kids who are aspiring to be software designers would be not only to take courses in programming, but in addition take them in art and music. This will help tremendously. Graphics, after all, are only paintings on a computer.

STRATEGY

TIPS, TRICKS, AND HINTS

SWORD OF KADASH

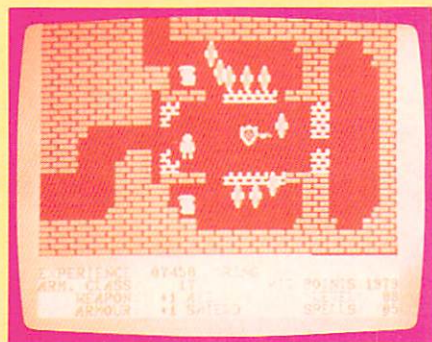
Penguin Software. Arcade/adventure. Your mission: to enter the ominous Fortress of the Dragon and retrieve the legendary Sword of Kadash. You'll have to slay a slew of deadly guards, avoid a virtual kaleidoscope of devious traps, and collect fabulous weapons and treasures on the

way to your destiny with the Sword. (Hints and game for Apple, C 64.)

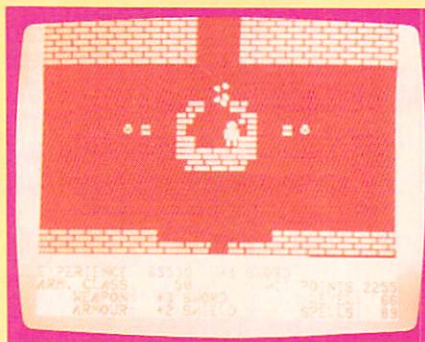
🔑 **Monsters** don't move when you leave a room. If a room has more than one entrance (or a particularly large one), stand in it as far from the monsters as possible. Then draw them toward you, firing as they approach. When they are almost upon

you, duck out of the room. Go into the room from the other side (or other entrance), and repeat until you kill them all.

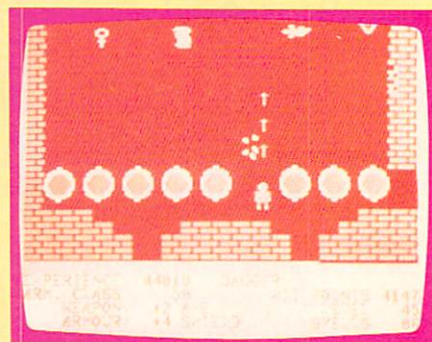
🔑 When the computer puts a new room on the screen, it draws any secret doors last. If you watch carefully you usually can see them being placed. —SPECIAL Ks



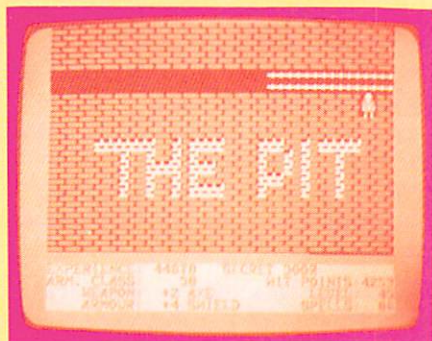
Free one or two of the blades on the far right. Don't take the shield or get caught by the blade on the right. Then release the bats and they'll run into the blades. Next, set the two knives on the far left free. Make sure they are moving together so you can get the scrolls and exit through the top.



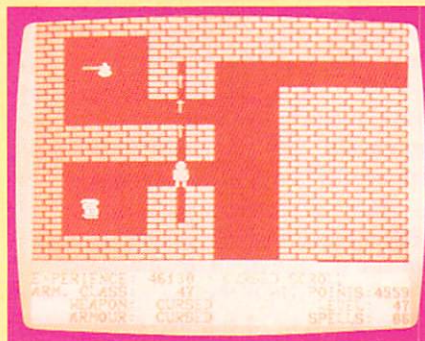
On this screen, getting the sword creates a blade which can be shot and destroyed. You also must shoot the rings before getting them. There is a secret door at the bottom center of the screen that creates monsters and darts.



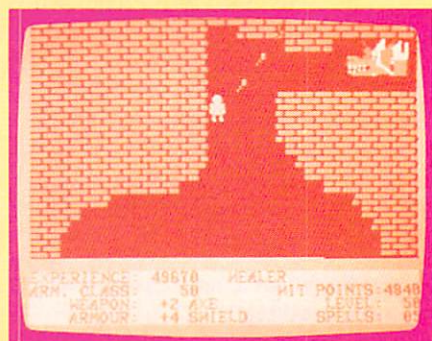
Enter from the bottom right-hand passage and shoot the sixth boulder from the left before it reaches screen bottom. Once at the top of the screen, don't take the symbol before you take the scroll—the scroll is cursed!



There is a secret door in the floor of the passage to a pit. If you don't delay upon entering the room, you can reach it safely just as the first arrow passes.



Ignore this room the first time you reach it. Two rooms later there is a hallway filled with cursed items. Take all of the items and return to the room pictured above for the scroll. Before you take the scroll, however, shoot out the invisible blocks in the groove in order to give the blade a place to go.



Move to the top of the right wall and fire up. Then go to the left wall and fire diagonally up and to the right. Return to the right wall and run to the secret door you just opened. (Yes, you will have to take some damage. That's why the healers are there.)

CAPTAIN GOODNIGHT AND THE ISLANDS OF FEAR

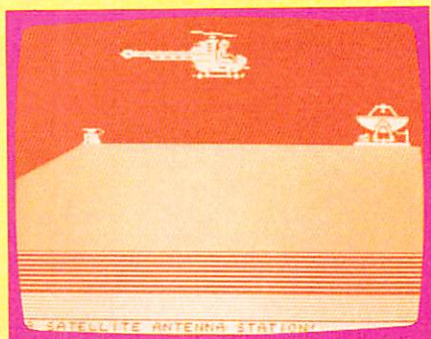
Broderbund. Arcade/adventure. Your mission: With infinite courage, an indefatigable spirit, and a competition model yo-yo, you set out to stop the nefarious Dr. Maybe's scheme to blackmail the world. But first you must make your way to Doom Island, using a plane, boat, submarine, and the old "shoe-shine express." Good luck, Captain, and

don't forget your trusty Secret Decoder. (Hints and game for Apple.)

🔑 **Jet:** The only way to get to the Araan Desert without dying is to destroy every radar station. Memorize the pattern—there are four stations before Potia Inlet, and two afterwards. If you have trouble, the next best way is not to shoot the first ra-

dar station and be blown up. Then you can fly across the top of the screen, dodging the aircraft, as cruise missiles will only fly in straight paths.

🔑 **Araan Desert:** When you see an enemy robot, duck and fire from that position until it's destroyed. If a robot doesn't fire, don't duck.



Destroy the satellite dish or fall prey to the Star Wars defense system.

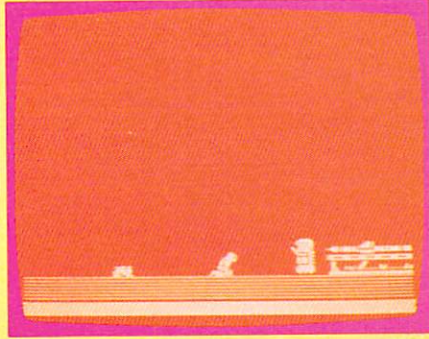
🔑 **Odom Island:** If a robot throws a grenade, run toward it until the grenade goes over your head. Then duck and keep shooting until the robot is blown up. Some robots take three hits to kill, so try to give yourself as much space as possible.

🔑 **Motorboat:** Don't push the joystick all the way forward. You

need to be able to stop quickly. When the bombers fly high, you should move fast so that the bomb passes behind you. If the bomber flies low or at medium height, stop.

🔑 **Modo Island:** When a robot begins to appear at the edge of the screen, stop. Then fire, making sure your shot hits, and move so the robot is off-screen. Repeat until it's blown up. While in the tank, don't stop moving or else the grenade-dropping robots will jam your treads. When you use the helicopter, fly to the top of the screen before going forward. That way you won't be shot by the laser cannon.

🔑 **Doom Island:** Fire when you see a robot, and then run away from the grenade. Keep it up for a sure-fire way to destroy them. Use the same strategy against the berserkers



As soon as the grenade passes overhead, duck and fire.

as you did against robots in the Araan Desert.

🔑 Some fun (but dumb) things to try: run off the end of the dock; put in the wrong password; don't destroy the satellite antenna dish; loiter around for awhile; and go the wrong way in the Araan Desert. Enjoy! —SPECIAL Ks

H I N T H O T L I N E

RESCUE RAIDERS, Sir-tech Software (Apple). Strategy/arcade. Your mission: to destroy the enemy time machine with your demolition truck in eight different battles.

🔑 At the beginning of a battle, pick up five men in your helicopter. Fly all the way across the screen, past the enemy time machine. Ignore the heat-seeking missile chasing you, and drop your men into the little bunker beyond the time machine. Although you'll probably lose your 'copter, this will prevent the enemy from creating any more vehicles. This takes some practice, and can get extremely difficult in higher levels. However, once done, it will make your life a lot simpler.

—CHARLES LAI, 14, Newbury Park, California

COSMIC BALANCE, SSI (C 64, Atari, Apple, IBM PC/PCjr). Strategy/construction set. Your mission: to construct a fleet of ships and fight them against the computer or another player.

🔑 Try to keep your speed a few lightmils below maximum, so even if some of your drives are destroyed, you can still make maneuvers.

🔑 If your crew is greatly out-

numbered by enemy marines, completely drain all the shields and set course for another one of your ships. When the enemy captures it, it shouldn't be too difficult to destroy the ship. —JEREMY T. GOEMAAT, 13, Bussey, Iowa



Explore the fantastic world of *King's Quest II*.

GHOSTBUSTERS, Activision (C 64). Arcade/skill. Your mission: to save the day by capturing ghosts, earning more money than you started with, and struggling to the top of the Temple of Zuul to prevent the Gatekeeper and Keymaster from teaming up.

🔑 When you're typing in your name and account number, enter GOO as your name and all the is you can as your number. This will give

you well over \$200,000. —MARK DELURSKI, 14, Carteret, New Jersey

BEYOND CASTLE WOLFENSTEIN, Muse Software (C 64). Arcade/adventure. Your mission: to penetrate Hitler's bunker and assassinate him.

🔑 To get to Hitler, follow these directions. Level 1: up, right, up, up, up, up, right, right, down, right, up, use elevator. (On this level you must also find the bomb.) Level 2: up, up, up, up, right, up, right, down, down, down, down, down, use elevator. Level 3: down, down, right, right, up, up, left, up, right. To escape, simply reverse the path. —JASON M. MARSH, 13, Richland, Washington

KING'S QUEST II, Sierra On-Line (IBM PC/PCjr). Graphic adventure. Your mission: to rescue the maiden Valanice from her prison in an enchanted land, and marry her.

🔑 Pray that you have a silver cross to protect you from evil.

🔑 It's not polite to look under beds unless invited.

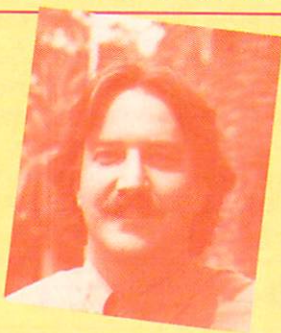
🔑 Shell-collecting is a profitable hobby. —SPECIAL Ks



MUSIC PROGRAMS BY JOEY LATIMER

As a child, one of the first pieces of classical music I remember hearing was "The Nutcracker," a ballet by the Russian composer Peter Tchaikovsky. Act II of "The Nutcracker" takes place in the fairyland realm of a handsome young prince and features a series of dances. The most famous is *Dance of the Sugar-Plum Fairy*. I loved it because of the unusual harmonies and the bell-like sounds which were emitted from an instrument called a celesta.

In Microtones this month, you can dance off to fairyland by typing our version of *Dance of the Sugar-Plum Fairy* into your computer. It's been condensed and arranged for three parts. Enjoy!



APPLE II SERIES/DANCE OF THE SUGAR-PLUM FAIRY

```
10 DIM N(113,2)
20 FOR I = 0 TO 36:READ A:POKE 768+I,A:NEXT I
30 FOR I = 1 TO 8:READ N(I,1),N(I,2)
40 N(I+8,1) = N(I,1):N(I+8,2) = N(I,2):NEXT I
50 FOR I = 17 TO 42:READ N(I,1),N(I,2)
60 N(I+50,1) = N(I,1):N(I+50,2) = N(I,2):NEXT I
70 FOR I = 43 TO 66:READ N(I,1),N(I,2):NEXT I
80 FOR I = 93 TO 113:READ N(I,1),N(I,2):NEXT I
90 HOME:VTAB 10:HTAB 5
100 PRINT "DANCE OF THE SUGAR-PLUM FAIRY"
110 FOR I = 1 TO 113
120 POKE 8,N(I,1):POKE 6,20*N(I,2):CALL 768
130 NEXT I:GOTO 110
1000 DATA 165,8,201,2,176,2,169,2,74,133,10,164,8
1010 DATA 240,8,173,48,192,234,234,136,208,251,56
1020 DATA 165,7,229,10,133,7,176,235,198,6,208,231,96
2000 DATA 144,4,72,4,128,4,64,4,121,4,60,4,153,4,76,4
2010 DATA 144,4,60,2,72,2,60,4,64,4,76,4,72,4,81,2
```

```
2020 DATA 81,2,81,4,85,2,85,2,85,4,91,2,91,2,91,4
2030 DATA 96,2,72,2,91,2,72,2,96,4,60,1,64,1,72,1
2040 DATA 81,1,85,4,60,2,72,2,60,4,64,4,45,4,47,4
2050 DATA 60,2,60,2,60,4,64,2,64,2,64,4,72,2,72,2
2060 DATA 72,4,76,2,64,2,72,2,64,2,76,4,96,1,108,1
2070 DATA 121,1,128,1,72,2,85,2,72,4,76,4,0,4,81,2
2080 DATA 96,2,81,4,85,4,0,4,91,2,108,2,91,4,96,4
2090 DATA 0,4,96,1,76,1,64,1,47,1,72,4,0,2
```



ATARI 400, 800, 600/800XL, & 130XE/DANCE OF THE SUGAR-PLUM FAIRY

```
10 DIM V1(104,2),V2(92,2),V3(95,2)
20 FOR I=1 TO 104:READ P,D:V1(I,1)=P:V1(I,2)=D:NEXT I
30 FOR I=1 TO 92:READ P,D:V2(I,1)=P:V2(I,2)=D:NEXT I
40 FOR I=1 TO 95:READ P,D:V3(I,1)=P:V3(I,2)=D:NEXT I
50 POKE 752,1:PRINT CHR$(125):POSITION 4,12
60 PRINT "DANCE OF THE SUGAR-PLUM FAIRY"
70 P1=1:P2=1:P3=1:T1=0:T2=0:T3=0
80 SOUND 1,V1(P1,1),10,6
90 SOUND 2,V2(P2,1),10,6
100 SOUND 3,V3(P3,1),10,4
110 T1=T1+1:T2=T2+1:T3=T3+1
120 IF T1=V1(P1,2) THEN T1=0:P1=P1+1:SOUND 1,0,0,0
130 IF T2=V2(P2,2) THEN T2=0:P2=P2+1:SOUND 2,0,0,0
140 IF T3=V3(P3,2) THEN T3=0:P3=P3+1:SOUND 3,0,0,0
150 IF P1=105 THEN T0
160 FOR D=1 TO 12:NEXT D:GOTO 80
1000 DATA 0,4,47,4,0,4,42,4,0,4,40,4,0,4,50,4
1010 DATA 0,4,47,4,0,4,42,4,0,4,40,4,0,4,50,4
1020 DATA 0,4,40,2,47,2,40,4,42,4,50,4,47,4,53,2
1030 DATA 53,2,53,4,57,2,57,2,57,4,60,2,60,2,60,4
1040 DATA 64,2,47,2,60,2,47,2,64,4,0,4,0,4,40,2
1050 DATA 47,2,40,4,42,4,29,4,31,4,40,2,40,2,40,4
1060 DATA 42,2,42,2,42,4,47,2,47,2,47,4,51,2,42,2
1070 DATA 47,2,42,2,51,4,0,4,0,4,40,2,47,2,40,4
1080 DATA 42,4,50,4,47,4,53,2,53,2,53,4,57,2,57,2
1090 DATA 57,4,60,2,60,2,60,4,64,2,47,2,60,2,47,2
1100 DATA 64,4,0,4,0,4,47,2,57,2,47,4,50,4,0,4
1110 DATA 53,2,64,2,53,4,57,4,0,4,60,2,72,2,60,4
1120 DATA 64,4,0,4,64,1,50,1,42,1,31,1,47,4,64,4
1130 DATA 96,4,81,4,96,4,72,4,96,4,68,4,96,4,72,4
1140 DATA 96,4,81,4,96,4,72,4,96,4,68,4,96,4,72,4
1150 DATA 0,4,64,2,81,2,64,4,72,4,85,4,81,4,91,2
1160 DATA 91,2,91,4,96,2,96,2,96,4,102,2,102,2
1170 DATA 102,4,64,4,72,4,81,4,0,4,0,4,60,2,81,2
1180 DATA 60,4,60,4,42,4,40,4,47,2,47,2,47,4,53,2
1190 DATA 53,2,53,4,69,2,69,2,69,4,64,4,68,4
1200 DATA 85,4,0,4,0,4,64,2,81,2,64,4,72,4,85,4
1210 DATA 81,4,91,2,91,2,91,4,96,2,96,2,96,4,102,2
1220 DATA 102,2,102,4,81,4,72,4,81,4,0,4,0,4,68,4
1230 DATA 72,4,85,4,0,4,76,4,81,4,96,4,0,4,85,4
1240 DATA 72,4,81,4,0,4,72,4,81,4,72,4
1250 DATA 193,4,0,4,193,4,0,4,193,4,0,4,193,4,0,4
1260 DATA 193,4,0,4,193,4,0,4,193,4,0,4,193,4,0,4
1270 DATA 193,4,162,4,193,4,144,4,193,4,136,4
1280 DATA 193,4,128,4,193,4,114,4,193,4,102,4
1290 DATA 96,4,182,4,193,4,96,1,108,1,121,1
1300 DATA 128,1,136,4,193,4,144,4,204,4,162,4
1310 DATA 194,4,173,4,173,4,173,4,128,4,173,4
1320 DATA 114,4,128,4,243,4,128,4,128,1,144,1
1330 DATA 162,1,173,1,193,4,162,4,193,4,144,4
1340 DATA 193,4,136,4,193,4,128,4,128,4,193,4,114,4
1350 DATA 193,4,102,4,96,4,173,4,193,4,162,1
1360 DATA 173,1,193,1,217,1,230,4,173,8,85,1
1370 DATA 96,1,108,1,121,1,128,4,193,8,96,1
1380 DATA 108,1,114,1,128,1,144,4,217,8,108,1,121
1390 DATA 1,128,1,144,1,162,4,182,4,193,4,128,4
```


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COMMODORE 64 & 128 (C 64 MODE)/DANCE OF THE SUGAR-PLUM FAIRY

```

10 DIM V1(104,3),V2(92,3),V3(95,3)
20 S=54272
30 FOR I=0 TO 24:READ A:POKE I+S,A:NEXT I
40 X1=S+4:X2=S+11:X3=S+18
50 H1=S+1:L1=S:H2=S+8:L2=S+7:H3=S+15:L3=S+14
60 FOR I=1 TO 104:READ V1(I,1),V1(I,2),V1(I,3):NEXT I
70 FOR I=1 TO 92:READ V2(I,1),V2(I,2),V2(I,3):NEXT I
80 FOR I=1 TO 95:READ V3(I,1),V3(I,2),V3(I,3):NEXT I
90 POKE 53280,4:POKE 53281,0:PRINT CHR$(147)
100 POKE 214,10:PRINT
110 PRINT TAB(5);"DANCE OF THE SUGAR-PLUM FAIRY"
120 P1=1:P2=1:P3=1:T1=0:T2=0:T3=0
130 POKE H1,V1(P1,1):POKE L1,V1(P1,2)
140 POKE H2,V2(P2,1):POKE L2,V2(P2,2)
150 POKE H3,V3(P3,1):POKE L3,V3(P3,2)
160 POKE X1,17:POKE X2,17:POKE X3,17
170 T1=T1+1:T2=T2+1:T3=T3+1
180 IF T1=V1(P1,3) THEN T1=0:P1=P1+1:POKE X1,16
190 IF T2=V2(P2,3) THEN T2=0:P2=P2+1:POKE X2,16
200 IF T3=V3(P3,3) THEN T3=0:P3=P3+1:POKE X3,16
210 IF P1=105 THEN 120
220 GOTO 130
1000 DATA 0,0,0,0,0,68,68,0,0,0,0,0,28
1010 DATA 133,0,0,0,0,0,28,133,0,0,0,15
2000 DATA 0,0,4,42,62,4,0,0,4,47,107,4,0,0,4,50,60,4
2010 DATA 0,0,4,39,223,4,0,0,4,42,62,4,0,0,4,47,107,4
2020 DATA 0,0,4,50,60,4,0,0,4,39,223,4,0,0,4,50,60,2
2030 DATA 42,62,2,50,60,4,47,107,4,39,223,4,42,62,4
2040 DATA 37,162,2,37,162,2,37,162,4,35,134,2,35,134,2
2050 DATA 35,134,4,33,135,2,33,135,2,33,135,4,31,165
2060 DATA 2,42,62,2,33,135,2,42,62,2,31,165,4,0,0,4
2070 DATA 0,0,4,50,60,2,42,62,2,50,60,4,47,107,4,67
2080 DATA 15,4,63,75,4,50,60,2,50,60,2,50,60,4,47,107
2090 DATA 2,47,107,2,47,107,4,42,62,2,42,62,2,42,62
2100 DATA 4,39,223,2,47,107,2,42,62,2,47,107,2,39,223
2110 DATA 4,0,0,4,0,0,4,50,60,2,42,62,2,50,60,4,47,107

```

```

2120 DATA 4,39,223,4,42,62,4,37,162,2,37,162,2,37,162
2130 DATA 4,35,134,2,35,134,2,35,134,4,33,135,2,33,135
2140 DATA 2,33,135,4,31,165,2,42,62,2,33,135,2,42,62,2
2150 DATA 31,165,4,0,0,4,0,0,4,42,62,2,35,134,2,42,62
2160 DATA 4,39,223,4,0,0,4,37,162,2,31,165,2,37,162
2170 DATA 4,35,134,4,0,0,4,33,135,2,28,49,2,33,135,4
2180 DATA 31,165,4,0,0,4,31,165,1,39,223,1,47,107,1
2190 DATA 63,75,1,42,62,4,31,165,4,21,31,4,25,30,4,21
2200 DATA 31,4,28,49,4,21,31,4,29,223,4,21,31,4,28
2210 DATA 49,4,21,31,4,25,30,4,21,31,4,28,49,4,21,31
2220 DATA 4,29,223,4,21,31,4,28,49,4,0,0,4,31,165,2,25
2230 DATA 30,2,31,165,4,28,49,4,23,181,4,25,30,4,22,96
2240 DATA 2,22,96,2,22,96,4,21,31,2,21,31,2,21,31,4
2250 DATA 19,239,2,19,239,2,19,239,4,31,165,4,28,49,4
2260 DATA 25,30,4,0,0,4,0,0,4,33,135,2,25,30,2,33,135
2270 DATA 4,33,135,4,47,107,4,50,60,4,42,62,2,42,62,2
2280 DATA 42,62,4,37,162,2,37,162,2,37,162,4,29,223,2
2290 DATA 29,223,2,29,223,4,31,165,4,29,223,4,23,181,4
2300 DATA 0,0,4,0,0,4,31,165,2,25,30,2,31,165,4,28,49
2310 DATA 4,23,181,4,25,30,4,22,96,2,22,96,2,22,96,4
2320 DATA 21,31,2,21,31,2,21,31,4,19,239,2,19,239,2
2330 DATA 19,239,4,25,30,4,28,49,4,25,30,4,0,0,4,0,0
2340 DATA 4,29,223,4,28,49,4,23,181,4,0,0,4,26,156,4
2350 DATA 25,30,4,21,31,4,0,0,4,23,181,4,28,49,4,25
2360 DATA 30,4,0,0,4,28,49,4,25,30,4,28,49,4,10
2370 DATA 143,4,0,0,4,10,143,4,0,0,4,10,143,4,0,0,4
2380 DATA 10,143,4,0,0,4,10,143,4,0,0,4,10,143,4,0,0
2390 DATA 4,10,143,4,0,0,4,10,143,4,0,0,4,10,143,4,12
2400 DATA 143,4,10,143,4,14,24,4,10,143,4,14,239,4,10
2410 DATA 143,4,15,210,4,10,143,4,17,195,4,10,143,4
2420 DATA 19,239,4,21,31,4,11,48,4,10,143,4,21,31,1
2430 DATA 18,209,1,16,195,1,15,210,1,14,239,4,10,143
2440 DATA 4,14,24,4,9,247,4,12,143,4,10,143,4,11,218
2450 DATA 4,11,218,4,11,218,4,15,210,4,11,218,4,17,195
2460 DATA 4,15,210,4,8,97,4,15,210,4,15,210,1,14,24,1
2470 DATA 12,143,1,11,218,1,10,143,4,12,143,4,10,143
2480 DATA 4,14,24,4,10,143,4,14,239,4,10,143,4,15,210
2490 DATA 4,10,143,4,17,195,4,10,143,4,19,239,4,21,31
2500 DATA 4,11,218,4,10,143,4,12,143,1,11,218,1,10
2510 DATA 143,1,9,104,1,8,225,4,11,218,8,23,181,1
2520 DATA 21,31,1,18,209,1,16,195,1,15,210,4,10,143
2530 DATA 8,21,31,1,18,209,1,17,195,1,15,210,1,14,24
2540 DATA 4,9,104,8,18,209,1,16,195,1,15,210,1,14,24
2550 DATA 1,12,143,4,11,48,4,10,143,4,15,210,4

```

M I C R O N O T E S

News from the computer-music front . . . Random House Software has announced the release of **Making Music on Micros**—a musical approach to computer programming by **Dr. Fred T. Hofstetter**. The package includes step-by-step instructions and a disk loaded with songs, samples, sounds, and subroutines. *Making Music*, \$69.95 for the Apple II series and IBM PC/PCjr computers, teaches BASIC programming, music composition, and displays music notation.

For those Commodore 64 owners who've been jealously watching Macintosh users pull down menus and play with windows, this program's for you. From **Broderbund**, **The Music Shop** is available in standard C 64 and MIDI format. It lets you write, edit, play, and print original music compositions. Included are several sample arrangements of popular and classical songs. The program is \$44.95.

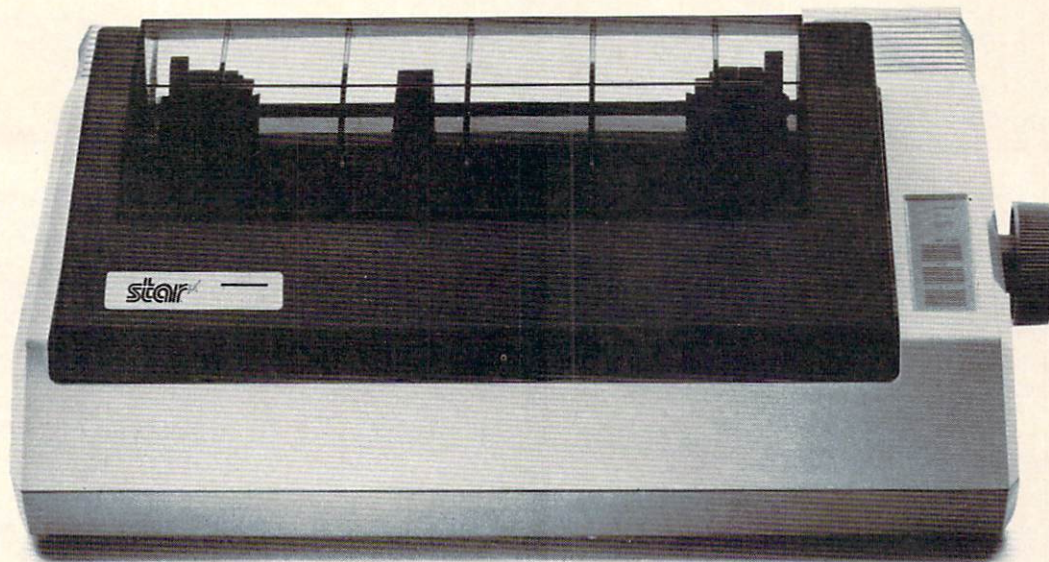
In need of a good computer-music reference book?

You've come to the right place. For Atari lovers, there's **Dr. C. Wacko's Miracle Guide to Designing and Programming Your Own Atari Computer Arcade Games**. It's \$12.95 (\$29.95 with disk) from **Addison Wesley**, and contains a fun-loving, zany approach to creating sounds and music for your games. C 64 users will enjoy **Bill L. Behrendt's Music and Sound for the Commodore 64** from Simon and Schuster/The General Reference Group. This book—\$14.95 (\$29.95 with disk)—does a good job of taking the mystery out of programming sound on the 64, and includes a library of interesting sound effects.

Also useful is **Commodore Magic** by **Michael Callery** from E.P. Dutton's Hard/Soft Press, \$12.95 (\$21.95 with disk), and **ADAM's Companion** from **Avon Books**. Chapter nine of *ADAM's Companion* offers a thorough explanation of how music is made on the ADAM, and includes a table of frequency values for musical notes and technical info for creating three-voice compositions. The book costs \$9.95.

—JOEY LATIMER

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SHORT PROGRAMS BY JOHN JAIN SCHIGG

Enter *Super Save*, a machine-language program that lets your Atari or Commodore 64 BASIC programs save and load whole blocks of memory to and from disk at super speed. *Super Save* is presented here in the form of a short BASIC program that READS machine-language in from DATA statements, and stores it in a free area of your computer's memory.

To call *Super Save* in Atari BASIC, you use the expression `A=USR(1536,IOCB,OP,ADR("D:FILENAME"),START,BYTES)`. IOCB is the number of the I/O channel through which you want to save or load—1 through 6 are valid. OP is the command number for the type of operation you want to perform: 8 to save, 4 to load. The third parameter lets you specify a filename—just put it between the quotes. START is the start address of the memory block you want to save, or the beginning of the target memory area you want to load to. BYTES is the number of bytes in the memory block you want to save, or the number of bytes you want to load. Don't worry—if you mess up the parameters, *Super Save* won't bomb... it'll simply stop your program with a special error code 175.

To save a file with the Commodore version of *Super Save*, use the statement `SYS 49152,0,BOT,TP,"FILENAME",8`. BOT (Bottom) is the start address of the memory block you want to save. TP (Top) is the end address (not the number of bytes in the block!). Stick your filename between the quotes.

To load a block of memory, use `SYS 49152,1,"FILENAME",8`. The block will load automatically into the memory area from which it was originally saved.

ATARI 400, 800, 600/800XL, & 130XE/SUPER SAVE

```
10 FOR I=1536 TO 1647:READ A:POKE I,A:NEXT I
1000 DATA 104,201,5,208,100,104,208,97,104,240
1010 DATA 94,48,92,201,7,16,88,10,10,10
1020 DATA 10,170,104,208,80,104,201,4,240,4
```

```
1030 DATA 201,8,208,71,157,74,3,169,0,157
1040 DATA 75,3,104,157,69,3,104,157,68,3
1050 DATA 169,3,157,66,3,32,86,228,48,40
1060 DATA 189,74,3,9,3,157,66,3,104,157
1070 DATA 69,3,104,157,68,3,104,157,73,3
1080 DATA 104,157,72,3,32,86,228,48,11,169
1090 DATA 12,157,66,3,32,86,228,48,1,96
1100 DATA 132,185,76,64,185,169,175,133,185,76
1110 DATA 64,185
```

Add these statements for a demonstration:

```
19 REM --SAVE TEXT SCREEN TO DISK IN FILE "D:TEMP"--
20 IOCB=1:OP=8:START=PEEK(88)+256*PEEK(89):BYTES=960
30 A=USR(1536,IOCB,OP,ADR("D:TEMP"),START,BYTES)
40 PRINT CHR$(125)
49 REM --LOAD "D:TEMP" BACK INTO SCREEN RAM--
50 OP=4
60 A=USR(1536,IOCB,OP,ADR("D:TEMP"),START,BYTES)
69 REM --PRESS <BREAK> TO STOP PROGRAM--
70 GOTO 70
```

COMMODORE 64 & 128 (C 64 MODE)/SUPER SAVE

```
10 FOR I=49152 TO 49227:READ A:POKE I,A:NEXT I
1000 DATA 32,67,192,165,21,208,23,165,20,240,20
1010 DATA 201,1,208,15,32,253,174,32,212,225,169
1020 DATA 97,133,185,169,0,32,213,255,96,32,67
1030 DATA 192,165,20,133,251,165,21,133,252,32,67
1040 DATA 192,165,20,72,165,21,72,32,253,174,32
1050 DATA 212,225,104,168,104,170,169,251,32,216
1060 DATA 255,96,32,253,174,32,158,173,76,247,183
```

Add these statements for a demonstration:

```
19 REM --SAVE TEXT SCREEN TO DISK IN FILE "TEMP"--
20 BOT=1024:TP=2048
30 SYS 49152,0,BOT,TP,"a0:TEMP",8
40 PRINT CHR$(147)
49 REM --LOAD "TEMP" BACK INTO SCREEN RAM--
50 SYS 49152,1,"TEMP",8
59 REM --PRESS <RUN/STOP> TO STOP PROGRAM--
60 GOTO 60
```

STUMP DR. KURSOR CONTEST

You know Dr. Kursor. He's the guy who answers all the technical computer questions in K-POWER most months. Unfortunately, Dr. K's getting too big for his britches. In fact, he's acting like a real know-it-all these days. So we're asking our readers to send their toughest tech-

nical questions to Dr. K.

We'd appreciate questions that are about computers in general, rather than machine-specific. That way the Doc can put them in his column and all our readers will be able to enjoy the answers. We'll throw all the questions that stump Dr. Kursor (he

says there won't be many!) into one pile. Three will be chosen at random and authors of those questions will win \$25!

So send in your questions to: Stump Dr. Kursor Contest, c/o K-POWER, 730 Broadway, New York, NY 10003, before Nov. 23.



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13300	Corcomp RS-232 Card	\$79.95			
32965	Myarc RS-232 Card	\$79.95			
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			32967	Extended BASIC	\$69.95
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Welcome to FAMILY COMPUTING's Software Guide, the most comprehensive listing available of two dozen of the newest, most noteworthy, and/or best programs on the market. Our reviewers include families from all over the country who have judged the software according to the following criteria: long-term benefits and applications, adaptability, and advantages of using a computer for a given task. Programs have been evaluated and rated for their performance in each of the categories listed below. More detailed reviews follow the chart. Unless otherwise noted, all programs are in disk format.

Here's a rundown of the rating categories and what they mean: **O** = Overall performance, given the limi-

tations and capacities of the particular computer for which the software is intended. **D** = Documentation, or the instructions and literature that accompany a program. **EH** = Error-handling, the software's capacity to accommodate errors made by the user—an especially important consideration with software for younger users. **PS** = Play system, in the games reviews, the quality of the game design and the game's playability. **GQ** = Graphics quality, also evaluated in light of each particular brand's graphics capabilities. **EU** = Ease of use after the initial learning period, which varies from computer to computer. **V** = Value for money, or how the software measures up to its price.

HOME BUSINESS/HOME MANAGEMENT

Title Manufacturer Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings					
				O	D	EH	GQ	EU	V
BETTER WORKING: FILE & REPORT Spinnaker Software Corp. One Kendall Square Cambridge, MA 02139 (617) 494-1200 \$50 (C 64) \$60 (Apple) ©1985	Creates files and allows exchange of information with other two programs in the <i>Better Working</i> series—spreadsheet (see below) and word processor. Well-written manual and personalized report function make it a good choice. —FLESCHER	Reviewed on 48K Apple; help screens require 64K; information transfer requires second drive. Also for C 64.	30-day warranty; \$5 thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	N/A ★ ★	A ★ ★	★ ★ ★
BETTER WORKING: SPREADSHEET \$50 (C 64) \$60 (Apple) (See above for address and phone.)	Because of compatibility with the rest of the <i>Better Working</i> series (see above), <i>Spreadsheet</i> can vastly improve home management at an affordable price. Has most standard spreadsheet features, plus graphing ability. —FLESCHER	Reviewed on 48K Apple. Also for C 64.	30-day warranty; \$5 thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A ★ ★	★ ★ ★
FILEMAKER Forethought, Inc. 1973 Landings Drive Mountain View, CA 94043 (415) 961-4720 \$195 ©1985	Ability to adjust formats easily makes this an outstanding data base. Amount of information stored is limited only by room on disk. Simple enough for small jobs, powerful enough for small business use.† —AKER	128K Macintosh; second drive recommended.	90-day warranty; \$15 thereafter. User makes backup.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E ★ ★	★ ★ ★
MICROSOFT WORD Microsoft Corp. 10700 Northup Way Bellevue, WA 98009 (206) 828-7400 \$195 ©1985	A heavy-duty word processor for those who've graduated from <i>MacWrite</i> . The many major features included make it a pleasure to use.† —AKER	Reviewed on 128K Macintosh; second drive recommended. Substantially different version available for IBM PC/PCjr (\$375).	30-day warranty.	★ ★ ★	★ ★ ★	★ ★ ★	N/A ★ ★	E ★ ★	★ ★ ★
PROTEUS Research Design Associates, Inc. P.O. Box 848 Stony Brook, NY 11790 (516) 928-5700 \$80 ©1985	This "idea processor" is a tool that encourages outlining before writing; use to narrow your topic or to develop ideas. Lacks real word processor capabilities and can't share files with one.† —SOLOMON	Reviewed on 64K Apple IIe, IIc with 80-column card. Also for C 64. Planned for IBM PC/PCjr.	30-day warranty; \$10 thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	N/A ★ ★	E ★ ★	★ ★ ★
VIDEOWORKS Hayden Software 600 Suffolk St. Lowell, MA 01854 (800) 343-1218 \$100 ©1985	Animates <i>MacPaint</i> images into a sequence of pictures so smooth you'd swear you were watching <i>MacTelevision</i> ! Fun, educational, and practical.† —AKER	128K Macintosh.	90-day warranty; \$10 fee thereafter for backup.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A ★ ★	★ ★ ★

RATINGS KEY **O** Overall performance; **D** Documentation; **EH** Error-handling; **GQ** Graphics quality; **EU** Ease of use; **V** Value for money; ★ Poor; ★★ Average; ★★★ Good; ★★★★★ Excellent; N/A Not applicable; E Easy; A Average; D Difficult; † Longer review follows chart

EDUCATION/FUN LEARNING

Title Manufacturer Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings					
				O	D	EH	GQ	EU	V
RICHARD SCARRY'S BEST ELECTRONIC WORD BOOK EVER Coleco Industries 999 Quaker Lane S. West Hartford, CT 06110 (800) 842-1225 \$30 ©1984	Expand early reader's vocabulary by matching colorful objects with words. Switch between 4 skill levels at any time, and go on a scavenger hunt to find objects in word list. Good child-parent interaction. Ages 3-6. —DAVENPORT	Coleco ADAM (cass.).	30-day warranty.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
CHIPWITS Epyx 1043 Kiel Court Sunnyvale, CA 94089 (408) 745-0700 \$30-\$35 ©1985	Reinforce beginning programming lessons by commanding and playing with <i>Chipwits</i> —greedy robots that understand pictures rather than words. An excellent adjunct to a programming course, but it's not a do-yourself learning tool. For ages 10+. —SUMMERS	Reviewed on C 64. Joystick. Apple Mac versions from BrainPower, 24009 Ventura Blvd., Calabasas, CA 91302.	30-day warranty; \$10 thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
FORECAST! CBS Software One Fawcett Place Greenwich, CT 06836 (203) 622-2500 \$50 ©1984	Set up a home weather station by tracking temperature, barometric pressure, wind, and sky conditions. Produces surprisingly accurate forecasts and develops good scientific methodology. For ages 12+. —WILDMAN	Reviewed on 48K Apple. Also for C 64; 128K IBM PC/PCjr with color graphics board.	30-day warranty; \$5 thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	N/A	E	★ ★ ★
MICROZINE NO. 8 Scholastic Software 730 Broadway New York, NY 10003 (212) 505-3501 ©1984 First issue \$15, \$30 thereafter.	The eighth edition of a computerized collection for kids ages 8-12. Includes mystery adventure, secret journal, drawing program, puzzles, and cartoons. All the programs are easy to use, yet challenging and fun. —FRANK	48K Apple. Joystick, paddles, or optional Koa-laPad.	60-day warranty; \$5 thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★
RAINY DAY FUN THORN EMI Computer Software Inc. 1881 Langley Irvine, CA 92714 (714) 261-6600 \$40 ©1984	A classic toy chest on a disk! With a coloring book, dot-to-dot puzzles, Pin the Tail on the Donkey, mask maker, mazes, and more. The menus consist of colored icons that even preschoolers can understand. Most activities have a print-out option that adds to the fun. Best for ages 5+. —SUMMERS	Reviewed on C 64. Also for 48K Apple.	90-day warranty; \$9 thereafter.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	E	★ ★ ★ ★
STICKYBEAR TOWN BUILDER Weekly Reader Family Software 245 Long Hill Road Middletown, CT 06457 (203) 638-2400 \$30 (C 64) \$40 (Apple) ©1984	Children design a town, selecting from a menu of buildings, parks, bridges, and other community components. Deceptively simple, yet holds their attention. Helps develop an understanding of spatial relations, teaches basic map skills. For ages 5-9. —BUMGARNER	Reviewed on C 64. Also for 64K Apple.	90-day warranty.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	A	★ ★ ★ ★
TEMPERATURE LAB Hayden Software 600 Suffolk St. Lowell, MA 01854 (800) 343-1218 \$100 ©1985	An extraordinary opportunity to discover the "whats" and "whys" of temperature by performing experiments and observing results. Complete lab kit contains disk, thermometer, temperature sensor, computer interface, and massive manual. Complex ideas become crystal clear; tremendous fun for ages 13+. —MORRIS	Reviewed on 48K Apple. Also for C 64. Apple II/II plus require \$10 adapter from Hayden.	90-day warranty; \$10 fee for backup.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	A	★ ★ ★ ★
VOCABULATOR Zephyr Services 306 S. Homewood Ave. Pittsburgh, PA 15208 (412) 247-5915 \$30 ©1984	Learn brief definitions of rarely used words (e.g., "vulpine," "dilatatory," "jabot," "rime," etc.). Flash cards and multiple choices are two teaching methods, plus you can customize with your own words. Repetitious and poorly documented. —BUMGARNER	Reviewed on 64K Apple. Also for 64K IBM PC/PCjr.	90-day warranty.	★ ★	★	★ ★	N/A	E	★ ★

RATINGS KEY O Overall performance; D Documentation; EH Error-handling; GQ Graphics quality; EU Ease of use; V Value for money; ★ Poor; ★★ Average; ★★★ Good; ★★★★★ Excellent; N/A Not applicable; E Easy; A Average; D Difficult; † Longer review follows chart

GAMES REVIEWS BY JAMES DELSON

Title Manufacturer Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings						
				O	D	PS	GQ	EU	V	
BEACH-HEAD II Access Software, Inc. 2561 S. 1560 W. Woods Cross, UT 84087 (801) 973-0123 \$40 ©1985	Sophisticated follow-up to last year's best-selling strategy/arcade game. 1-2 players attempt to liberate prisoners from the Dictator's island fortress and escape alive. Four scenarios, for ages 10+.	C 64. Joystick(s). Planned for 48K Apple.	30-day warranty; \$10 thereafter. \$7.50 for backup.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	D	★ ★ ★	
BEAST WAR Avalon Hill 4517 Harford Road Baltimore, MD 21214 (301) 254-9200 \$25 ©1985	Lively, though extremely simplified, hybrid of chess and arcade gaming. An inferior clone of <i>Archon</i> in play system, but good for younger and more inexperienced gamers. For ages 10+.	48K Apple. Paddles/joystick optional.	30-day warranty; \$10 thereafter.	★ ★	★ ★	★ ★	★ ★	A	★ ★ ★	
COMPETITION KARATE Motivated Software, Inc. 80 Rancho Drive Mill Valley, CA 94941 (415) 303-9005 \$35 ©1984	One of the year's best, combines the character-building features of a role-playing game with the streamlined play of a strategy/arcade program. A must for serious gamers ages 12+.	48K Apple. Paddles optional.	30-day warranty; \$10 fee thereafter.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	A	★ ★ ★ ★	
CRUSADE IN EUROPE MicroProse Software, Inc. 120 Lakefront Drive Hunt Valley, MD 21030 (301) 667-1151 \$40 ©1985	Simplified wargame for all levels of expertise. Play short scenarios or tackle the campaign as 1-2 players fight their way across Europe from the Normandy invasion through the Battle of the Bulge. For ages 12+.	Reviewed on 48K Atari. Also for 64K Apple; C 64; 128K IBM PC/PCjr. Joystick optional.	90-day warranty; \$10 thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★	
GATO Spectrum HoloByte, Inc. 1050 Walnut, Suite 325 Boulder, CO 80302 (303) 443-0191 \$40-\$50 ©1985	The most sophisticated submarine simulation to date. Track and sink Japanese ships during W.W. II, controlling every aspect of sub's operations. First-rate graphics with realistic play make this great for ages 12+.	Reviewed on 128K Apple IIe. Also for Apple IIc; 128K IBM PC/PCjr; 128K Macintosh.	30-day warranty; \$7.50 thereafter; \$10 for Macintosh version.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	A	★ ★ ★ ★	
GOLF'S BEST 1 Step Software, Inc. Charlotte Plaza, Suite #1300 Charlotte, NC 28244 (704) 364-1510 \$50 ©1984	Exciting golf simulation. 1-4 players choose club, determine how hard and at what angle ball should be hit, then see shots predicted before hitting away. Suitable for ages 10+.	Reviewed on 128K IBM PC/PCjr with color graphics adapter. Also for 64K Apple with color monitor.	Unlimited warranty.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★	
ON-TRACK COMPUTER MODEL CAR RACING Gamestar, Inc. 1302 State St. Santa Barbara, CA 93101 (805) 963-3487 \$25 ©1985	Not a bad race car simulation, but lacks good graphics and play system. 1-2 players choose driver's personality, length and surface of course, then steer, shift gears, and brake using joystick. Best for kids ages 8+.	Reviewed on 48K Atari. Also for C 64. Joystick.	90-day warranty.	★ ★	★ ★	★ ★	★ ★	E	★ ★ ★	
ROBOTWAR Muse Software 347 N. Charles St. Baltimore, MD 21201 (301) 659-7212 \$40 ©1981	The classic robot construction set game, it's considered the bedrock on which all subsequent build-it-yourself programs are based. Write movement and strategy for a warrior robot. For ages 12+.	48K Apple.	Unlimited warranty; \$10 fee for backup.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	A	★ ★ ★ ★	
WAR IN RUSSIA Strategic Simulations, Inc. 883 Stierlin Road, A-200 Mountain View, CA 94043 (415) 964-1200 \$80 ©1984	Exciting simulation of entire W.W. II Russian campaign. Division-sized units determine fate of Germany and Russia. Good play system, but nearly impossible for Germans to win. A fascinating game for advanced players, ages 12+.	Reviewed on 48K Apple. Also for 48K Atari.	30-day warranty; \$10 fee thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	D	★ ★ ★	
THE WIZARD OF OZ Spinnaker Software Corp. One Kendall Square Cambridge, MA 02139 (617) 494-1200 \$27 ©1985	Pleasantly diverting text-graphic adventure for children and novice players, it retells classic fantasy tales of L. Frank Baum. Easy to use, but graphics are dated. For ages 10+.	C 64.	30-day warranty; \$5 fee thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★	

RATINGS KEY O Overall performance; D Documentation; PS Play system; GQ Graphics quality; EU Ease of use; V Value for money; ★ Poor; ★★ Average; ★★★ Good; ★★★★ Excellent; @ ★★ to ★★★★, depending on price; N/A Not applicable; E Easy; A Average; D Difficult; † Longer review follows chart

or a word-count feature, which one might expect from a major word processor like this.

Those are quibbles, however, when compared to the advantages. Word would stand out, even if the field of Mac word processors were crowded. —SHARON ZARDETTO AKER

Proteus

HARDWARE REQUIREMENTS: Reviewed on Apple IIc and IIe. Also for C 64; planned for IBM PC/PCjr.

MANUFACTURER: Research Design Associates, Inc.

PRICE: \$80

A blank page of paper. An empty computer screen. Both often intimidate writers starting a piece and frequently cause lamentations like, "What do I write about? How should I begin?"

So we postpone writing until the deadline nears, then rush to complete the assignment. This leaves little time to think through an idea and even less to revise. Yet, those awkward beginning moments can be overcome with techniques employed before the first draft.

Proteus, an "idea-processor," is an educational tool for developing such techniques. By writing down all our ideas on a subject, the theory goes, we can decide what to say and how to best approach it.

Five "modules" aid organization. "Freewriting" makes it easy to jot down ideas without worrying about mechanics. "Looping" develops those ideas by focusing on individual topics. "Listing" provides an orderly, numbered sequence. "The 5 Ws"—who, what, why, where, and when—help structure the facts. The fifth module, "Cubing," allows you to consider the subject from various analytical perspectives.

My 12-year-old daughter Debbie used *Proteus* before writing a mystery story for her junior high-school magazine. She began with "Freewriting" to brainstorm about the plot, characters, setting, and conflicts. Then she worked with "Looping" to expand the story line and develop each character. "Listing" helped plan the sequence of events.

A current-events assignment proved the usefulness of "The 5 Ws," and "Cubing" made an expository-writing project more explicit. Both the manual and on-screen prompts were very helpful.

Unfortunately, *Proteus* lacks real

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Other special features include: Easy loading, long-life cartridge ribbon. Crisp printing. And, with your purchase, you get a **TOLL-FREE** phone number to call for useful tips or questions you might have.

CHARACTER SET: Full upper and lower case 96 character ASCII set with descenders and underlining. Software selectable single or double wide character fonts. **GRAPHICS:** High resolution dot addressable graphics.

PRINT FORMAT: 8" line length; 80 characters per line at 10 CPI; 136 characters per line at 17 CPI.

PAPER SLEW (ADVANCE): 10 lines per second, stepper motor controlled. User selectable pressure roller or tractor feed.

DATA INPUT: Parallel. Centronics type 7-bit ASCII. TTL level with STROBE. **ACKNOWLEDGE** returned to indicate data was received. **SERIAL:** RS232C. With **BUSY** handshake. 10 or 11 bits: 110, 150, 300, 1200 Baud. **INPUT POWER:** 115 volts.

PRINT RATE: 100 characters/second. Data Buffer: 1K (Optional expandable to 2K).

OPERATIONAL CONTROLS: Power on/off, set top of form, select/deselect, line/forms, feed.

MEDIA: Roll paper: 8 1/2" W x 5" dia. single ply or pressure sensitive multiple copy paper. .012" max. thickness. Fan fold paper: 1" to 9 1/2"

sprocket (including sprocket margins). .012" max. thickness.

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SOFTWARE REVIEWS

word-processor capabilities and can't even share files with one. If you're used to word processing, you can get frustrated when you're not allowed to insert, delete, or revise. It's also annoying to recopy parts of your work when doing the first draft. Despite the excellent outlining techniques *Proteus* encourages, it has definite drawbacks. —GWEN SOLOMON

VideoWorks

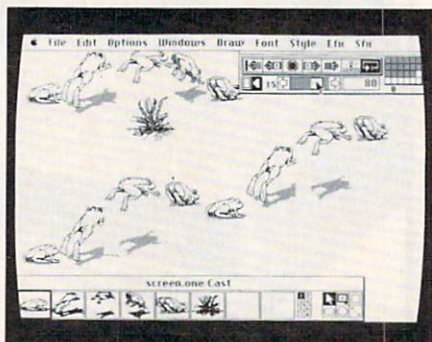
HARDWARE REQUIREMENTS: 128K Mac.
MANUFACTURER: Hayden Software
PRICE: \$100

Three letters alone do justice to *VideoWorks*: Wow! Animated *MacPaint* images create a sequence of pictures so smooth you'd swear you were watching MacTelevision.

You can animate by recording each "frame" separately, clicking on the screen where you want the object to appear, or by dragging an object with the mouse and recording the entire movement. You can also create animation by specifying the direction and the number of pixels (screen points) that you want the ob-

ject to shift between frames.

Up to 26 objects can be moved at a time. Each has a defined plane, and appears to be passing in front of or behind other objects. To those moving parts, add background scenery and sound effects. The overall production is controlled from an editing



window where you coordinate motion with background and sound. (Steven Spielberg, move over!)

The many options make the program seem a little complicated at first. But taken a step at a time, the creation of a full-scale animated computer show is really very simple.

It's not easy enough for a child, though, so don't expect the under-10 set to handle it well.

Adding *MacPaint* art is a snap; without closing *VideoWorks*, a convenient desk accessory helps paste in a *MacPaint* document. Or use the mini-*MacPaint* that's built in. If you're not the artistic type, "clip art" disks are always available. Hayden includes one filled with excellent *MacPaint* images for starters.

If fun isn't reason enough to buy this program, items on the demo disk suggest more practical possibilities. There are traditional-style presentation graphics—with bar graphs growing and pie charts baking before your eyes—and video-style presentation graphics that are more like a sitcom than a spreadsheet. Something educational? In one sequence, a tuning fork channels "visible" sound waves into an ear as the ear drum vibrates sympathetically.

The animation quality is extraordinary, as are the enjoyment and satisfaction. It's a rare piece of software that can be recommended without reservations. *VideoWorks* is one.

—SHARON ZARDETTO AKER

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EDUCATION/ FUN LEARNING

Chipwits

HARDWARE REQUIREMENTS: C 64.

MANUFACTURER: Epyx

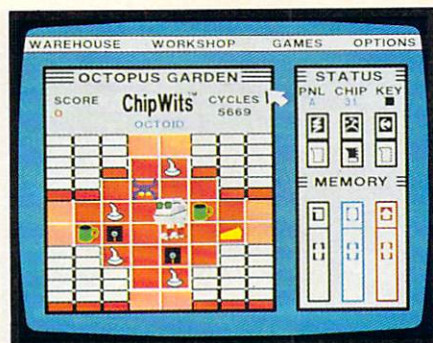
PRICE: \$29-\$35

MANUFACTURER'S SUGGESTED AGE: 8-12

Memorizing the odd languages that computers use is often the hardest thing about learning to program. Not so when you play with *Chipwits*—software that teaches problem solving and logical thinking—qualities needed by programmers at all levels.

A "Chipwit" is a greedy robot that you teach using pictures, not words. You tell your robot what to do by using a joystick to give picture commands. When you think your robot's set of commands is logically complete, try it out in one of eight games that range in difficulty from Sandbox (easy) to M.I.T. (difficult).

Chipwits provides a complete programming environment. In the "Workshop," select commands ("operators") from a picture menu and place them in sockets. A second



menu then appears, showing which components ("arguments") will work with each command. Commands range from simple to complex, providing sophisticated control.

If the game robot performs poorly, enter the "Debug" mode. Here, action progresses in slow motion or one command at a time, while the robot itself turns and beeps on-screen. The program's only real drawback is that it takes too long to switch between the "Debug" and "Game" modes.

Chipwits is an excellent adjunct to a programming course for those over 10, but it's not a do-it-yourself learning tool. The documentation is too

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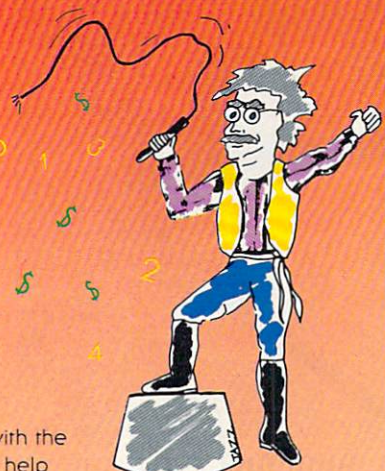
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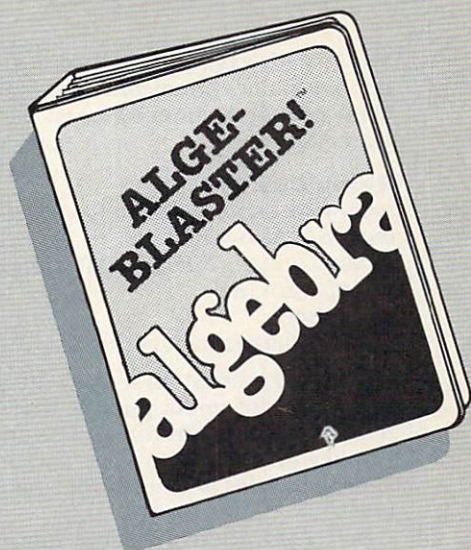
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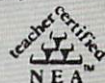
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SOFTWARE REVIEWS

stingy with examples to let a beginner work alone. Someone who understands programming must explain the concepts. —TAN A. SUMMERS

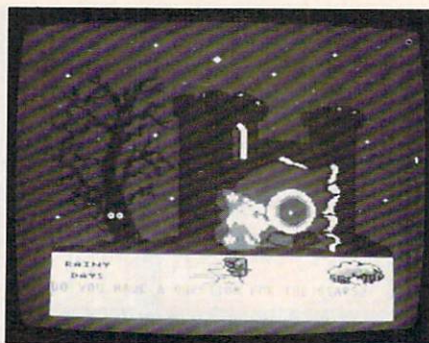
Rainy Day Fun

HARDWARE REQUIREMENTS: Reviewed on C 64. Also for Apple.
MANUFACTURER: THORN EMI Computer Software Inc.
PRICE: \$40
MANUFACTURER'S SUGGESTED AGE: 5-9

A classic toy chest on a disk! Lift the lid to find dot-to-dot puzzles that never wear out, Pin-the-Tail-on-the-Donkey tails that don't get lost, and sliding puzzles with tiles that never crack.

Better yet, there are seven more activities. The menus consist of colored icons that even preschoolers understand, and the print-out option (available for most of the games) adds to the fun.

Five activities let children combine freehand art with ready-made images. The coloring book has 50 pictures, four "crayon" widths, and seven colors (five on Apple). If more than one child wants to color the same picture, there's no need to squabble—print out copies and let



them color with real crayons. Make masks on-screen, then add extra fun by printing the mask and wearing the result.

Among other activities, you can select the invisible donkey, guessing his location by sound. Pin the Tail then becomes harder than it looks! Or talk with a grumpy wizard, who consults the stars to provide surprisingly apt responses to children's most hilarious questions. There are three different sliding puzzles and more mazes than we could count.

Our favorite activity was Paper Airplanes. You can follow along as one of six different gliders is constructed on-screen. Rotate the model for a 3-D view in case you get stuck. The fin-

ished gliders really fly!

This set of well-constructed games appeals to children ages 5 and up. It's the software bargain of the year. Where else can you buy toys that don't wear out for \$4 each?

—TAN A. SUMMERS

Stickybear Town Builder

HARDWARE REQUIREMENTS: Reviewed on C 64. Also for 64K Apple.
MANUFACTURER: Weekly Reader Family Software
PRICE: \$30 (C 64); \$40 (Apple)
MANUFACTURER'S SUGGESTED AGE: 6-9

Playing *Town Builder* has inspired my three kindergarten friends into some sophisticated conversation topics. One such topic is whether to locate the airport next to the diner ("So the pilots can eat . . ." and "Yeah, but the planes will make too much noise and scare away all the customers.") to suggestions that the road to the hospital should not have too many turns ("for when the ambulance drivers are in a hurry").

Selecting from a menu of buildings, parks, bridges, and other community components, children design a town. Roads are added automati-



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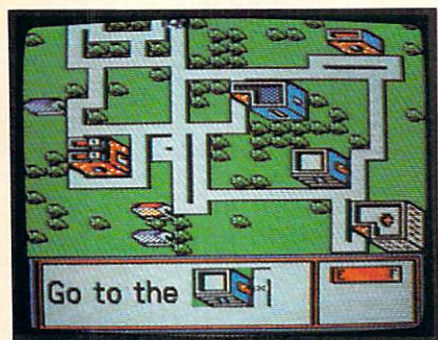
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cally to connect the various pieces. When the design is completed, store the town on disk for later exploration.

Any of these stored towns can be the scene of a visit. Kids can choose "Take a Drive" and stop by a number of places in town before their gas runs out. Another option during a visit, called "Find the Keys," introduces compass directions. Players try to find hidden keys using map clues at the bottom of the screen.

I haven't found anything lacking in this deceptively simple program. *Town Builder* holds children's attention, helps to develop an understanding of spatial relationships, and teaches basic map skills.

Two of my testers complained, however. They pointed out that even when they had the foresight to design a gas station into their town, they weren't allowed to refill their tanks in "Take a Drive" or "Find the Keys"! —MARLENE ANNE BUMGARDNER

Temperature Lab

HARDWARE REQUIREMENTS: Reviewed on 48K Apple. Also for C 64.

MANUFACTURER: Hayden Software

PRICE: \$100

MANUFACTURER'S SUGGESTED AGE: 11+

What makes some objects hot and others cold? Why does liquid rise in a thermometer? What makes fog? How do ice cubes cool drinks? Why is salt poured on icy roads?

If you've ever wondered about these questions, *Temperature Lab*, part of Hayden's Science Discovery Series, provides an extraordinary opportunity to discover the answers by performing experiments and observing the results.

Temperature Lab contains a complete laboratory kit: thermometer, temperature sensor, computer interface, disk, and a lengthy user's manual. The manual raises questions about everyday experiences with temperature. You proceed, however, to formulate hypotheses about why

temperature acts as it does, to collect data testing your hypotheses, and to interpret the results. The program thus teaches scientific method on an adventure of discovery.

Temperature Lab is not for the very young. The package recommends ages 11 plus, but our kids felt 13-14 would be closer to the mark. The concepts are sophisticated, yet even the most complex ideas become clear once you experience the various scientific processes.

Be warned, though, that this otherwise four-star package deserves a three-star rating alone on "value for money." If you own an Apple II or II plus, you must buy an extra \$10 adapter. Considering *Lab's* \$100 price tag, it might have been included free. Also, \$50 goes toward the interface that works with other titles in this series—a hefty investment unless you plan on buying those packages, and only one, *Light Lab*, is currently available. —TONY MORRIS

GAMES

Competition Karate

HARDWARE REQUIREMENTS: 48K Apple.
MANUFACTURER: Motivated Software, Inc.

PRICE: \$35

CRITIC'S SUGGESTED AGE: 12+



Here's a first in strategy/arcade gaming. *Competition Karate* combines the character creation and long-range development elements of games like *Wizardry*, with the streamlined play systems of programs like *Archon* and *Mail Order Monsters*.

Unlike more traditional role-playing games, however, this is a fast-paced program with no plot to complicate matters.

Begin by choosing a personality for each of up to 32 characters per team. The computer randomly gives each character a fighting profile which includes height, weight, strength, agility, quickness, stami-

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SOFTWARE REVIEWS

na, perception, courage, and arm and leg ability. Before every tournament, fighters can improve some or all of their skills by participating in "training sessions."

Each victory or defeat is registered in the characters' profiles after tournaments. If you choose to play only for practice, though, the profile is unaffected. Using either paddles or the keyboard, players choose from nine moves (six offensive, three defensive), then exchange blows until a player is knocked out, hurt, or outscored.

Victorious fighters receive points for effective hits or defensive moves. As they grow in power, the fighters advance from white belt up to red belt, finally retiring after they have beaten their teachers and become instructors themselves.

Competition Karate is a must for serious gamers ages 12 on up. And, like *Mail Order Monsters*, it's the start of a new trend in strategy/arcade gaming.

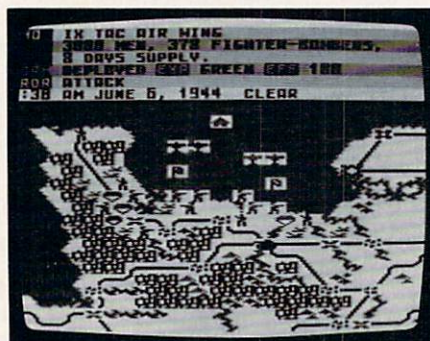
Crusade in Europe

HARDWARE REQUIREMENTS: Reviewed on 48K Atari. Also for C 64; 48K Apple; 128K IBM PC/PCjr.

MANUFACTURER: MicroProse Software

PRICE: \$40

CRITIC'S SUGGESTED AGE: 12 +



Crusade in Europe is a simplified wargame for one to two players at all experience levels. Choose from a number of short scenarios or tackle the campaign game (fighting for the Allies or defending Europe) from the Normandy invasion through the Battle of the Bulge.

Like MicroProse's earlier *NATO Commander*, the joystick-controlled play system allows quick movement and order-giving in the strategy and tactics field. And although the game is played in accelerated real time, (with the clock constantly running), players can stop it temporarily.

First-rate documentation includes easy-to-follow instructions, strategy tips, historical notes, and lots of il-

lustrations evoking the spirit and times of World War II.

While the game is enjoyable and fast-paced, the fun is hampered by weaknesses in the play system's combat resolution and in the uses of air power. Beginners won't care, but advanced players might, especially those used to the accepted formats of Strategic Simulations and Avalon Hill games. If you don't want to spend days on one game, and don't mind losing some details intrinsic to more complex systems, this one is recommended. For ages 12 on up.

Golf's Best

HARDWARE REQUIREMENTS: IBM PC/PCjr; 64K Apple.

MANUFACTURER: 1 Step Software

PRICE: \$50

CRITIC'S SUGGESTED AGE: 10 +

The proliferation of golf games has reached the point where nearly a half-dozen exist. Mathematical probability theories guide such games, making them perfect material for number-crunching. As further refinements occur, their ability to teach grows also. Of the ones we've tested, *Golf's Best* offers the most impressive teaching potential, even if the graphics aren't the best.

The secret of *Golf's Best* lies in its power to show players where each planned shot will land. This pre-determination, while only approximate, is a great addition, because it allows learning while playing—the key to success.

One to four persons can play, but beginners may want to use all four golfers at once. That way, you absorb the play system faster by seeing



how to modify each shot. Have one golfer consistently hit long shots, another short ones. Let the third experiment with the hook; let the last learn the potential of the slice. Then, when you've gotten the system down, revert to single play.

Not just a teaching tool, *Golf's Best* has an excellent control system for all aspects of play. As in the real

game, you choose a club for each shot, determine how hard and at what angle the ball should be hit, then swing away. The putting greens indicate the direction of a roll, so even slight variations can be taken into consideration. Not for arcade aficionados who want lots of action, this is a thinking game for sports enthusiasts and serious gamers age 10 and over.

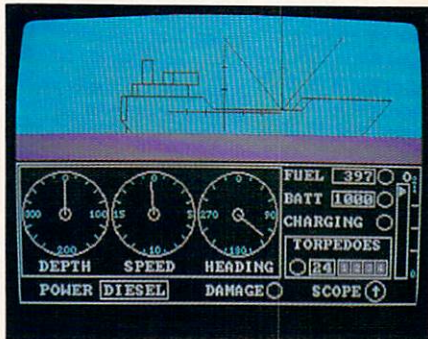
Gato

HARDWARE REQUIREMENTS: Reviewed on 128K Apple. Also for Apple IIc; 128K IBM PC/PCjr; Macintosh.

MANUFACTURER: Spectrum HoloByte, Inc.

PRICE: \$40 (Apple; IBM); \$50 (Mac)

CRITIC'S SUGGESTED AGE: 12 +



In this most sophisticated submarine simulation to date, players become World War II American submarine crews, tracking and sinking Japanese ships in the Pacific Theater. Cruising across vast oceans, competitors control every aspect of the sub's operations—from course, speed, and depth, to opening and closing torpedo bay doors.

Top-quality graphics are a big plus in *Gato's* realistic play system. Play-testers took turns as captain and crew and found their own methods for locating, stalking, and attacking enemy ships. I borrowed my method from the Clark Gable/Burt Lancaster movie, *Run Silent, Run Deep*, in which the tricky bow shot (firing head-on at a destroyer just as it's about to pass over you) proved most effective.

Gato also adds several features not found in previous sub simulations, such as *Submarine Commander*. Look for continuous play, a permanent log of player actions, rescue missions, quick movement options that thrust players into action without having to plot long ocean voyages, and a wider variety of visual aids to help coordinate action. A winner all the way! Suitable for ages 12 on up.

—REVIEWS BY JAMES DELSON

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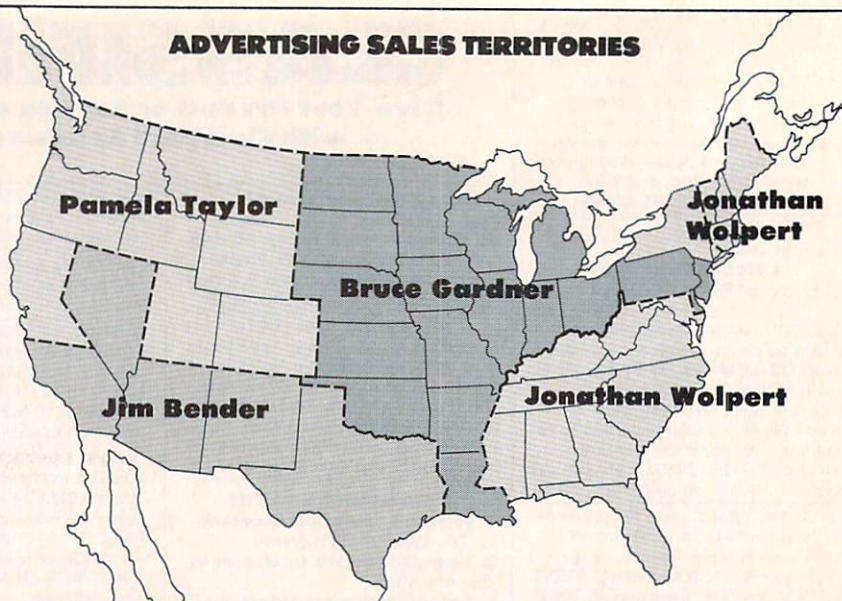
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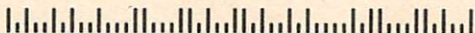
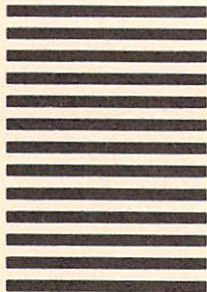
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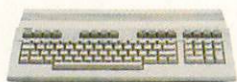


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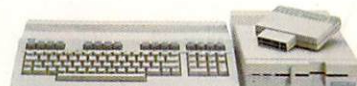
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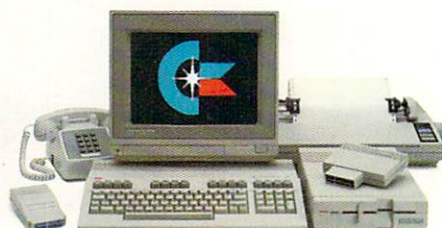
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